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METHOD FOR EARLY DETECTION OF EPIDEMIC TRENDS*

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THE PROMPT recognition of epidemic movements demands a dynamic conception of statistics of epidemic diseases. This idea may be illustrated by an analogy.

Suppose it is desired to intercept a person in a moving elevator of a thirty-story building. It is helpful to know that the elevator is, at a given moment, opposite the sixteenth floor, but the information is not adequate unless we know whether the elevator is moving up or down, or is stationary.

In a similar manner current statistics of epidemic diseases should inform us as to (a) present position, and (b) direction of the fundamental epidemic movement. These requirements have been admirably stressed in a recent paper by Garrison.[1]

FOUR FUNDAMENTAL FORCES

The elevator analogy is imperfect in that it fails to suggest the complex movements of an epidemic disease. We must here recognize four trends:

1. The long time, or secular trend, which for most communicable diseases has been gradually downward during the last 75 years or more.

2. The seasonal cycle. The incidence of most communicable diseases rises in the autumn and declines in the spring. Typhoid fever and whooping cough are among the exceptions to the rule. The range of movement varies greatly, but the peak incidence for some diseases averages as high as 25 times the seasonal low point.

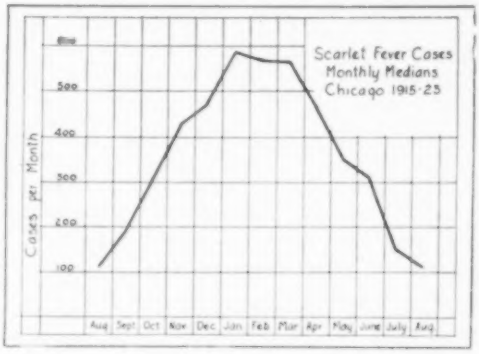

CHART I
Scarlet Fever Seasonal Curve

All important communicable diseases show this type of curve, or modifications thereof. The characteristic peak-month, however, varies from one disease to another. The diphtheria peak comes in the late fall, measles in spring, and typhoid in the summer.

* Presented at the Joint Session of the Public Health Administration and Vital Statistics Sections, American Public Health Association, Detroit, Michigan, October 29, 1924.

3. The epidemic cycle. While there is no clock-like regularity to this movement, there is, nevertheless, a tendency toward a rough periodicity, especially among those diseases which are as yet under very imperfect control. Few northern cities go longer than three years between epidemics of measles. Scarlet fever epidemics in most cities tend to recur between three and eight years, oftenest about five.

4. Finally we must recognize irregular movements. For example, during the extremely hot weather in the summer of 1921, there was an exceptionally sharp drop in scarlet fever incidence in the cities visited by the hot wave. Again, the opening of schools usually produces an increase in the incidence of the exanthemata.

Of these four tendencies, the first two (the secular trend, and the seasonal cycle) are more regular in their movements than the other two. They contribute the expected element of the total incidence and are, therefore, a logical basis for calculating a norm, or standard of comparison.

The other two forces (the epidemic cycle and the irregular movements) constitute the more variable element of communicable disease incidence. It is these, particularly the epidemic trend, that the health officer is primarily interested in measuring; and he needs to measure not only the present *level* of the incidence, but also the *direction* and rapidity of movement. What yard-stick shall he use for this purpose?

STANDARDS OF COMPARISON

The earliest and perhaps still the commonest standards of comparison have been (a) the preceding period (week or month), and (b) the corresponding period of the preceding year. Although these yard-sticks have been useful, they are sometimes misleading because they are themselves subject to wide fluctuations. It is as if we used the German mark as a monetary standard, or a rubber elastic for linear measurement. A satisfactory standard must be reasonably stable.

To meet this requirement, some health departments have used a type of average or median. Bolduan in the Department of Health of New York City as early as 1912 used the "normalized average" for typhoid fever; Carey in the Massachusetts State Department used the "endemic index"; Palmer in Detroit adopted the "norm," and the United States Public Health Service in 1923 began publishing the median incidence for certain American cities, the name later being changed to "estimated expectancy." All of these terms refer to the same general concept, namely, a probable mid-course, or the incidence which may, on an average, be expected at a given season in the absence of epidemics. In this paper, the term "expectancy" will be used.

The method of calculating the expectancy will be discussed later. At present we are interested primarily in its character and use.

THE EXPECTANCY

If the monthly or weekly expectancies for one year are charted, they will yield for most diseases a bell shaped curve or a modification thereof. (See Chart I.) Such charts may profitably be used for plotting the weekly or monthly case reports for comparison.

Suppose that the expectancy for scarlet fever in August is 100 cases, and the cases actually reported are 35. It is clear that the incidence is well within the safety zone being only 35 per cent of the expectancy. For the next month, September, the expectancy would be higher, say 150, and the reported cases 75. We are now at 50 per cent of the expectancy—on a higher epidemic level but still within the safety limit. Assume that this ratio of the actual to the expectancy continues to increase so as to form the series: 35 per cent, 50 per cent, 60 per cent, 75 per cent. The observer might suspect the approach of an epidemic although his reported cases are still below the expectancy.

In this way, the expectancy can be used for the early detection of epidemic move-

ments, for there is usually a gradual preliminary increase in this ratio-to-expectancy over a period of weeks or even months, before the violence of an epidemic makes itself felt. In fact, it will be shown later in this article that the beginnings of an epidemic movement may sometimes be detected even though case reports are actually undergoing the seasonal decline.

Since it is the *ratio* of the current incidence to the expectancy that is significant, it is logical that this ratio should be calculated monthly or oftener, and used as a sort of epidemic barometer. We suggest that it be called the "epidemic index."

Obviously, the index for a single week or month indicates only the epidemic position or level. It is static, not dynamic. Therefore, it is advisable in publishing the index either to show a curve such as Chart IV, or to quote the indices relating to about six previous periods, and to use such descriptive expressions as "upward trend," "horizontal trend," etc.

We now pass on to the consideration of the technique of calculating the expectancy and the epidemic index.

CALCULATION OF THE EXPECTANCY

The estimated expectancy is described in each issue of United States Public Health Reports as the approximate number of cases of a given disease that may be expected to occur during a certain week in the absence of epidemics. In most instances, the published figure is the median number of cases for the given week occurring during the nine preceding years.

The superiority of the median over the mean (average) for this purpose is easily illustrated by the statistics of influenza shown in Table I. Column I shows the January case totals from 1916–1924, inclusive, in chronological order. The average of the series is 3,313, but clearly this figure is far too high to be considered typical of January influenza in general; for it will be noted that the respective incidences of the six non-epidemic years are very much smaller than the calculated average—scarcely 15 per cent thereof. It is, of course, the tremendous incidence of the influenza epidemic that makes the average worthless in this instance.

TABLE I

JANUARY INFLUENZA CASE REPORTS, CHICAGO, 1916–1924

(1) *In Chronological Order*		(2) *In Magnitude Array*	
1,652		22,623	
329		4,444	
133	Mean	1,652	
4,444 =	29,818 / 9	374	Tri-Central Mean
22,623		Median = 329	= 836 / 3 = 279
94 =	3,313	133	
98		98	
374		94	
71		71	
29,818			

In column 2 of the same table, the cases are shown arrayed in the order of their magnitude. The median, or middle item, is 329. This figure is much more representative of the customary January incidence of influenza than is the average. (If we average the three middle items (374, 329, 133) we obtain a result which is still more dependable. This three-central-item-mean is really an adjusted median. Its use is indicated especially when the items near the median vary widely.)

If monthly medians or adjusted medians are calculated for scarlet fever we obtain a distribution similar to that shown in the first line of Table II and in Chart I. The whole calculation can be made in fifteen or twenty minutes.

Where the numbers are small, as with weekly data, the medians may have to be smoothed by plotting the data, drawing a smooth curve, and reading off the monthly or weekly intercepts of the curve.

TABLE II

MEDIAN MONTHLY CASE DISTRIBUTION, 1915-1923, SCARLET FEVER, CHICAGO, ILLINOIS

	Total	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
Nine-Year Medians....	4,502	112	189	308	432	476	584	566	562	463	351	306	153
Pct. of Annual Total..	100	2.5	4.2	6.9	9.6	10.6	13.0	12.6	12.5	10.3	7.8	6.8	3.4

The medians or adjusted medians calculated by this simple method may, for many communities, be used directly as expectancies. For accurate work, however, it may be necessary to make further adjustment for the reason that a median will usually reflect the conditions operative at the middle of the period taken. It follows that a nine-year median is usually about five years behind the times.

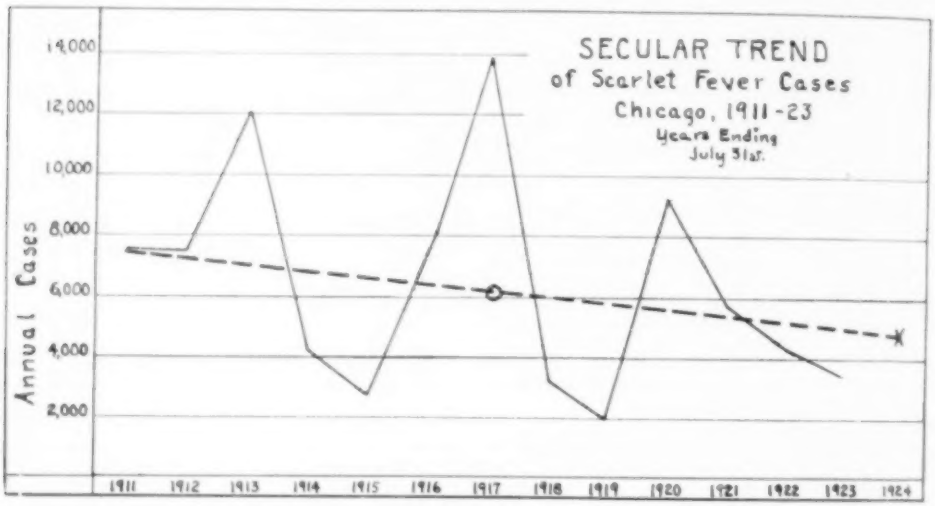

CHART II

SECULAR TREND

The slope of the trend line varies with such factors as population growth, improvement of case reporting, economic condition, general intelligence, and acquired immunity of the people; and with the progress of public health movement.

Now, in five years, a number of important changes may take place. For example:

1. The population changes. Akron, Ohio, in the last decade averaged 100 per cent increase per five years, Detroit about 55 per cent, and Los Angeles, 40 per cent.

2. Case reporting may gradually improve.

3. Case rates usually decline due to improved public health control, and perhaps to gradually acquired racial immunity. Thus, in Chicago, the decline of scarlet fever case rates has averaged about 4 per cent per year. In five years this would be equivalent to about a 20 per cent decline.*

In some cities, these forces tend to offset each other. The declining tendency of case rates, for example, may neutralize the effect of the increasing population and of improved case reporting. Where, however, there is a pronounced rising or falling long-time trend, it is advisable to make an adjustment in the expectancy in order that it may reflect a reasonable normal for today, rather than an obsolete standard of the past, as simple monthly averages or medians might do.

The adjustment, which need not be a difficult task, will next be described.

DETERMINATION OF THE SECULAR TREND

A mathematical method of determining the secular trend would be the method of least squares, but sufficient accuracy for our purpose is obtainable by plotting the annual case totals for from seven to fifteen years, and fitting a straight line. Chart II includes thirteen years of data. (It is well to begin and end the plotted period with years near the middle of an epidemic cycle; that is, not extremely high or low.)

* Usually there is also a gradual change in the proportionate monthly distribution of cases. The method of moving medians, used by Sydenstricker and Britton, is described with modifications by W. I. King, *J. Am. Stat. Asso.*, XIX, No. 147, p. 301, Sept., 1924. This method adjusts for change in the seasonal distribution.

After plotting the desired years, the next step is to find the median of the annual data and to plot this at the middle year (Point O on the chart).* A straight line is then drawn through this point so as to steer the most probable mid-course between the plotted points.

Observe that in Chicago the trend of case totals is downward. This is because the decline of case rates has been greater than the increase of population.** In a rapidly growing city like Detroit or Los Angeles, however, the trend line inclines upward.

The annual intercepts on this trend line constitute the approximate annual expectancies at the trend rate. Thus for the year ending July 31, 1924, the chart indicates a scarlet fever expectancy of about 4,800 cases. (By mathematical calculation the expectancy is 4,853.)

We can now find the monthly expectancies for any year, since we need only to distribute the annual expectancies according to the monthly percentages already calculated. This procedure has been carried out in Table III, which is the basis of Charts III and IV. Thus, to obtain the monthly expectancies for the 1923–4 seasonal cycle, the annual expectancy of 4,853 was multiplied successively by 2.5 per cent, 4.2 per cent, etc., yielding an expectancy of 120 cases for August, 201 for September, etc.

TABLE III

MONTHLY CASE EXPECTANCIES, CASE REPORTS AND EPIDEMIC INDICES. SCARLET FEVER, CHICAGO, ILLINOIS

	Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
Norm. Mo. Distrib. Pct.	100	2.5	4.2	6.9	9.6	10.6	13	12.6	12.5	10.3	7.8	6.8	3.4
1917–1918													
Expectancies	6101	151	254	418	586	650	793	766	762	633	473	413	205
Reported Cases	3229	228	324	483	470	421	323	224	213	188	163	100	92
Epid. Index Pct.		152	127.5	115.5	80	64.7	40.8	29.3	28	29.7	34.4	24.2	45
1918–1919													
Expectancies	5893	146	245	403	565	628	765	740	735	610	457	398	198
Reported Cases	2057	59	104	104	106	133	221	258	298	233	277	167	97
Epid. Index Pct.		40.5	42.5	25.8	18.7	21.2	28.9	34.9	40.5	38.2	60.6	42	49
1919–1920													
Expectancies	5685	142	236	390	545	605	738	713	710	588	440	386	192
Reported Cases	9303	93	304	613	888	1101	1379	1264	1374	941	750	417	179
Epid. Index Pct.		65.5	128.8	157.2	163	183	187	177	194	160	171	108	89
1920–1921													
Expectancies	5477	136	228	376	525	583	710	688	682	567	425	372	184
Reported Cases	5867	124	240	503	622	764	849	665	621	573	490	312	104
Epid. Index Pct.		91	105	134	118	131	119	97	91	101	115	84	57
1921–1922													
Expectancies	5269	130	218	360	505	560	685	670	656	545	408	357	177
Reported Cases	4430	137	237	413	563	495	558	577	490	338	286	224	112
Epid. Index Pct.		105	109	115	112	89	82	86	75	62	70	63	63
1922–1923													
Expectancies	5061	125	210	346	485	540	656	635	632	525	392	343	170
Reported Cases	3563	83	156	331	367	376	472	355	376	372	299	238	138
Epid. Index Pct.		66	74	96	75.5	70	72	56	59.5	71	76	69	81
1923–1924													
Expectancies	4853	120	201	332	466	517	629	609	606	501	376	332	163
Reported Cases	4398	91	150	218	354	466	637	475	552	478	480	376	191
Epid. Index Pct.		76	75	66	76	90	101	78	91	95	128	113	117
1924–1925													
Expectancies	4645	115	193	318	446	495	600	583	580	480	360	314	156
Reported Cases		75	144	329	498	718	1115	1138					
Epid. Index Pct.		65	75	103	111	145	186	195					

The epidemic index, or ratio of cases to expectancy may next be calculated. For August, 1923, it is $^{91}/_{120}$, or 76 per cent. This figure is a simple and convenient expression for the statement, "In August, 1923, reported scarlet fever cases were 76 per cent of the non-epidemic expectancy."

It should be borne in mind that the expectancy as calculated is based upon the

* The average is commonly recommended for the central point, but, as shown by Table I, the median is best suited for the present purpose. The mathematical fitting of a straight line to plotted points is described in Pearl's "Medical Biometry and Statistics" and in treatises on statistical mathematics.

** At this point many will ask, "why not use case rates in calculating the trend line?" While useful for demonstration purposes and for avoiding spirited arguments, the case rate method involves the extra steps of calculating from cases to rates and from rates back to cases, since the desired end-result is cases, and not rates. Furthermore, in rapidly growing cities, an unnecessary error is introduced due to incorrect population estimates. A trend line drawn for plotted case aggregates automatically allows for case trends due to population changes and often for other long time influences.

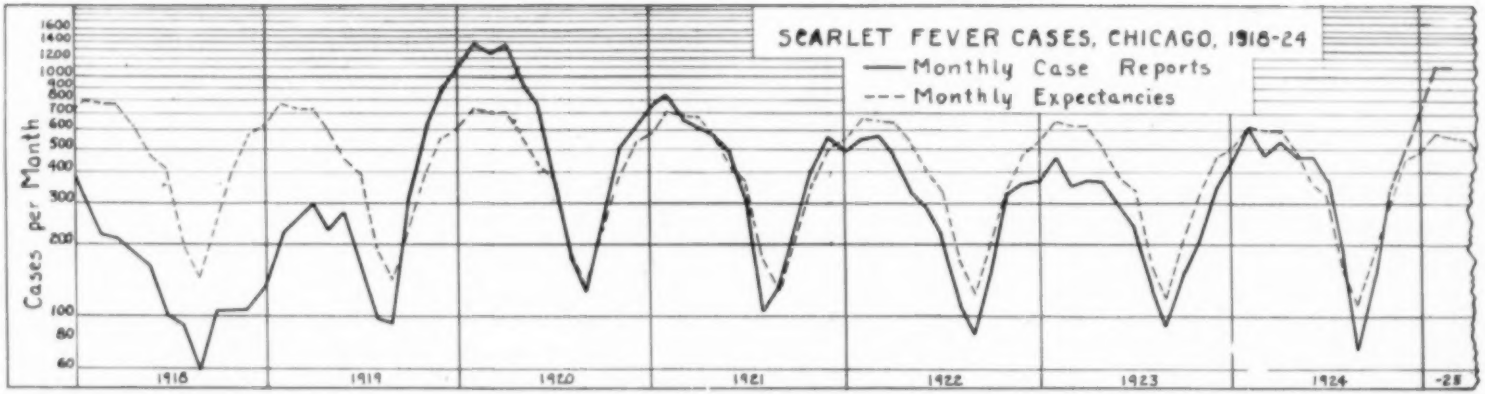

CHART III

ESTIMATED EXPECTATIONS AND ACTUAL CASE TOTALS COMPARED

The light dotted line represents the estimated monthly expectancies. These are practically equivalent to non-epidemic averages after allowing for declining case rates, and similar factors named in the text.

Note the low incidence (solid line) in 1918, the warning approach to the expectancy in the spring of 1919; the epidemic period of 1919–1920 and the gradual subsidence until 1923 when a similar, though not identical cycle was begun. (See author's note.)

This chart is drawn on a semi-logarithmic, or ratio scale, in order to show proportionate changes, not merely arithmetic differences. On this chart the changing vertical distance between the two curves is a measure of the ratio of reported cases to the expectancy. Thus the approach of the "case report" line toward the "expectancy" line in the spring of 1919 signified a rise in this ratio, and therefore a corresponding rise in the underlying epidemic tendency. An arithmetic scale would sometimes be deceptive in this regard.

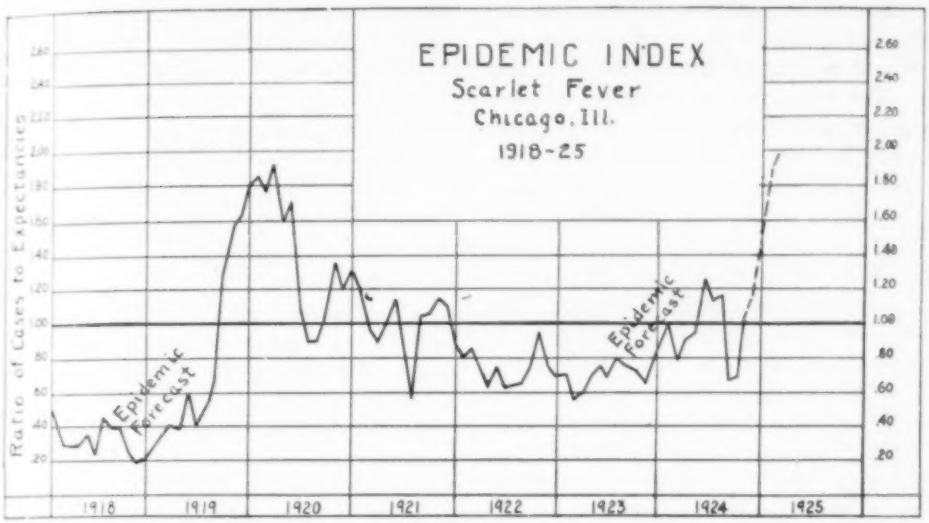

CHART IV

EPIDEMIC INDEX

The intermittent rise of the index during seven months beginning in November, 1923, made it fairly certain in June, 1924, that an epidemic would ensue the following winter.

supposition that the existing trends or conditions will continue without pronounced change. If, however, powerful new factors are introduced, the expectancies may no longer be representative. For example, the installation of a filtration plant will not only cut down the total annual expectancy of typhoid fever, but it will alter the monthly percentage distributions somewhat, since "residual" typhoid is relatively less prevalent in the winter than is water-borne typhoid.*

CURRENT REPORTS COMPARED WITH EXPECTANCIES

Once the monthly or weekly expectancies have been calculated, their use is simple. A chart may be prepared for each of the important diseases upon which the reported cases are plotted monthly or weekly in comparison with the expectancy. Chart III shows such a comparison covering a period of seven years.

Note on this chart (a) the gradual secular decline in the expectancy (dotted line), (b) the relatively low incidence (solid line) in 1918 in proportion to the expectancy, (c) the gradual approach to the expectancy curve in the spring of 1919, (d) the rise to a minor epidemic in 1919–1920, (e) the gradual subsidence during 1920–1923, (f) the initial crossing of the expectancy line in the spring of 1924, (g) the epidemic the following winter. (See author's note.)

THE EPIDEMIC INDEX

Chart IV shows the epidemic index for the same period as was included in the foregoing chart. (For the index, arithmetic paper is usually the more satisfactory.) The heavy profile line tells the same story as Chart III, but perhaps more simply and emphatically. It represents the movements of the epidemic index; that is, the ratio of the actual incidence to the expectancy.

Observe, as before, the preliminary warning rise in the spring of 1919, the

* A word of caution is necessary relative to the use of refined or corrected case reports. As high as 25 per cent of the typhoid fever case reports may later be found to rest upon incorrect diagnoses. If these cancelled cases are taken from the count, the medians of the resulting figures will be found too low to serve as criteria for current case reports, since the latter include the customary quota of wrong diagnoses. For weekly expectancies, therefore, it is best to use the medians of crude data, or to make an allowance for wrong diagnoses.

steep rise to an epidemic, the gradual decline, and the up-turn in the spring of 1924 culminating in the epidemic in the fall. There is a rough similarity between the latter period and that preceding the epidemic in 1919. Note that in both cases the index rises although cases are declining, as may be seen from the previous chart.

Some of the aberrations in the index are interesting and require comment. The sharp drop in August, 1921, has already been referred to as associated with the record hot weather that summer. The decline in August and September of 1924 was also clearly out of line with the general trend. It is possible that atypical weather was again responsible for the spring of 1924 was unusually inclement and the late summer very pleasant.

A close relationship between weather and scarlet fever incidence is suggested by the close correlation between the scarlet fever seasonal curve and the inverted temperature curve. Furthermore, it is well known that in very warm countries scarlet fever is practically unknown. A fruitful and interesting field for further research will be to work out a more exact statement of this relationship and, if possible, a mathematical formula. In so far as correctional factors can be worked out, the epidemic index curve will be smoothed and its usefulness correspondingly increased.

Although in this paper we have discussed chiefly scarlet fever, the use of the expectancy and of the epidemic index is by no means limited to this disease. In fact, by the methods described in this paper, a measles epidemic and a whooping cough epidemic were clearly foreseen months in advance of their actual advent.

The Surgeon-General of the United States Public Health Service and his able statisticians are entitled to much credit for publishing weekly in *Public Health Reports* the expectancy for five diseases in about one hundred cities in the United States. Every health officer who charts these data regularly in comparison with the current reports will find his grasp of the communicable disease situation greatly improved.

SUMMARY

1. For the early detection of epidemic trends, it is necessary to study the *direction* of the fundamental epidemic movement—not merely the current level of incidence.

2. The case incidence of the preceding week or month, or of the corresponding period the previous year is not always a dependable standard of comparison.

3. The expectancy, or median incidence of the corresponding period in from five to nine previous years is a more serviceable standard for gauging the present incidence.

4. The epidemic index, or ratio-to-expectancy, is an approximate barometer of the fundamental epidemic trend. The index often rises a number of months before the approach of an epidemic could be detected by the ordinary methods.

5. The current calculation and charting of epidemic indices can be done with very little labor from data furnished weekly in *Public Health Reports* for many cities, and will prove a useful device in communicable disease control.

REFERENCE

1. Garrison, Fielding. "The Newer Epidemiology." *Mil. Surgeon*, 53:1–14, July, 1923.

AUTHOR'S NOTE: When this paper was presented at the Detroit meeting of the Association in October, 1924, the curve of reported cases was still slightly below the expectancy. Since that time the threatened epidemic has materialized. Through the courtesy of the editor of the JOURNAL, it has been possible to bring Charts III and IV to date before going to press. (Heavy dotted line beginning late 1924 represents portions added to curves.) Observe from Chart IV that the epidemic index, which stood at approximately normal at the time this paper was presented last October, has since risen to practically 195 per cent of normal at the end of Februar, 1925.

THE CONTROL OF CANCER*

THE Committee on the Control of Cancer of this Section was appointed to consider one specific question: What should official health administrators do towards the control of cancer?

The membership comprises one health administrator, one vital statistician, and one professor of preventive medicine. For geographical reasons it has not been possible to have a committee meeting during the year. Also, at the request of the chairman of the committee, a group of five men actively concerned in cancer investigation and educational work were appointed by the chairman of the Section to act as an advisory committee. The chairman of the committee has had the benefit of the advice and counsel of all of the advisory members from time to time during the year past, which advice is here gratefully acknowledged.

I. The chief project studied during the year was the question of whether it would be practical to attempt to set up a small number of experimental cancer morbidity reporting areas. At first it was considered that such a measure would prove valuable, but the preponderance of opinion of the advisory members of the committee was unfavorable to this scheme on the following general grounds:

a. That it would be of little value to attempt to draw conclusions from such a scheme of reporting unless the members of the medical profession of each community included in such an area were seen practically individually and their active interest and support aroused, preferably by the same field worker, and that this would entail a heavy financial expenditure.

b. That even granted that such an attempt to secure the coöperation of various local medical personnel in representative and separated portions of the country was carried out, there was small likelihood that a sufficient percentage would make reports over a term of years in adequate detail, including supplemental reports on the progress of cases, as to render these reports of any serious statistical value.

Such being the preponderance of opinion of the experts, the committee does not recommend any such attempt under the auspices of the American Public Health Association at the present time.

II. One member of the advisory committee, however, while agreeing with the majority opinion on the impracticability of attempting to establish a tentative morbidity reporting area for cancer composed of scattered units over the country, is strongly of the opinion that within the confines of individual states some state health departments might be able to carry out such a proposed morbidity reporting system for certain municipal or county areas. This suggestion is passed on to the health executives of states and large municipalities as worthy of serious consideration, as it involves no sponsorship beyond state lines, and because of the more intimate contact possible within the boundaries of a state between the members of the medical profession and health departments, it might, in the judgment of the committee, succeed in enlisting active support from the medical professions of certain communities, where the larger, more ambitious scheme of selected municipal-

* Report of the Committee on Control of Cancer, presented to the Public Health Administration Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1925.

ities all over the continent forming a tentative reporting area would not be practicable.

III. A third method that is as yet but little tried is definitely feasible in the sense that it can be put into operation by the executive officer of any state health department, provided funds for even part-time services of a competent medical representative are at his command and he adjudges it worthy of trial. This is endeavoring by direct hospital visitation to learn from the surgical clinics of the state:

a. If they classify cancer statistics of their clinic in such particulars as location of lesion, sex, age, conjugal condition and relative progress of the lesion when operative assistance is sought, and if possible contributory or associated diseases.
b. If record is kept in a form that lends itself to continuing and cumulative analysis as to whether operation is advised or not, and reasons for advising against operative procedure.
c. Statistics of immediate results in operated cases.
d. "Follow-up" facts or subsequent progress of disease.

Nevertheless, in these days of the ambition of all good hospitals to stand in Class A, it does not seem unreasonable that by directly interesting the management and staff of hospitals in the definite value of such studies continued over periods of years, something useful in this direction might be brought about through state health departments taking the initiative in such movements. The Department of Public Health of Massachusetts is devoting part of the time of one of its medical staff to the institution of such a study among the surgical clinics of that state.

IV. We recommend, unless ample facilities already exist, that state health executives carry out a definite policy of making satisfactory arrangements with high-grade pathological laboratories, whereby without expense to patients or physicians pathological examinations on all manner of new growths can be made readily available to those surgeons or small hospitals who have not available the services of a competent pathological department.

V. We recommend that health administrators promote the movement for periodic health examinations apart from the other benefits of such procedure, because of the direct relationship that the spreading of such a custom must bear to the earliest possible clinical detection of incipient malignancy.

EUGENE R. KELLEY, M.D., *Chairman.*
LOUIS I. DUBLIN, PH.D.
MAZŸCK P. RAVENEL, M.D.

INDUSTRIAL HEALTH PROMOTION IN SMALL PLANTS*

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FOR THE PURPOSES of this report, a small plant is one employing less than 500 workers. The term "plant" is not limited to manufacturing organizations but embraces such others as mercantile, mining and transportation. These small plants utilize the services of the principal part of the 41 million gainfully employed persons in the country. An exact distribution of workers in manufacturing establishments by size of manufacturing enterprise is recorded by the current census.

CENSUS OF MANUFACTURES: 1919
UNITED STATES BUREAU OF THE CENSUS

Size of Plant Number of Wage Earners	Number of Establishments	Per-cent	Wage Earners Average Number	Per-cent
None other than owner	37,827	13.		0.
1 to 5	141,859	48.9	312,404	3.4
6 to 20	56,195	19.4	631,182	6.9
21 to 50	25,386	8.7	830,448	9.1
51 to 100	12,409	4.3	895,235	9.8
101 to 250	10,056	3.5	1,579,661	17.4
251 to 500	3,605	1.2	1,251,795	13.8
501 to 1,000	1,749	.6	1,205,628	13.3
Over 1,000	1,019	.4	2,390,019	26.3
Total	290,105	100.	9,096,372	100.

Percentage of plants having 500 or less workers, 99.
Percentage of workers in small plants, 60.4.

It appears from this chart that 99 per cent of the factories employ 500 or less persons, and of the total 9,096,372 factory workers, 5,500,625 or 60 per cent are engaged in these small plants. These figures from manufacturing, in general reflect the conditions obtaining in all the major divisions of occupation.

In large industrial plants the medical department has become a definite part of the organization. The manufacturer, the wage earner, and the community alike share in the established values derived from a factory medical department that regularly serves all employes in any sickness or injury; that throws around them healthy sanitary working conditions; that educates them in safety measures; and that places them on jobs for which they are individually, physically and mentally suited. Because of these immediate returns, the medical department justifies and pays for itself year by year. This very fact of self-maintenance should clothe industrial hygiene with extraordinary significance as a measure for the general betterment of community health.

The experience of large industrial enterprises prompts the belief that the coming together day by day of considerable numbers of persons for the purpose of work, affords the best opportunity yet devised for the health conservation of adults. If this be true, it becomes an obligation to determine the most satisfactory means for the extension of this constructive health work into the great number of small plants that utilize the services of the bulk of this country's wage earners.

WHAT CONSTITUTES ADEQUATE SERVICES FOR A SMALL PLANT

In small plants, medical work is usually limited to the care of emergencies. Such

* This article is based on an extended report filed with the committee as a whole, and was read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1925. The complete report contains the correspondence, opinions, publications, etc., from various individuals and organizations in different sections of the country.

[Editor's Note.—This is the second paper to be published from the Symposium on the Extension of Industrial Hygiene. See *A. J. P. H.*, March, 1925, for the Promotion of Industrial Health, by C. D. Selby, M.D.]

services are ordinarily obtained by sending the injured or sick person to some neighborhood physician. In severe emergencies any available neighborhood physician may be called into the plant. These physicians may be well qualified to take care of medical or surgical conditions, but very obviously they do not serve the best interests of the patient as a worker, or of the manufacturer, in that they are not industrial physicians; are not acquainted with trades processes and industrial health hazards. Their services however excellent only care for the unnecessary by-product of bad plant conditions.

In order to get away from the notion that a physician's phone number constitutes an industrial medical department the following standards for industrial health conservation in small plants are suggestively put forth as the minimum meriting the name "Industrial Medicine":

MINIMUM ESSENTIALS

1. Some or all of the medical activities must be carried out on the factory premises.
2. Activities may not be limited to emergency relief measures but must include some or all of such related measures as periodic physical examinations, accident prevention, health education, dental services, etc.
3. A work place (first-aid room, dispensary, hospital) suited in size and equipment to the individual plant, must be maintained on the premises.
4. The physical conditions of the plant, such as lighting, air conditions, drinking water facilities, etc., must receive such regular attention as will assure a continuous conformation to existing Board of Health or other legal requirements.
5. The responsible medical personnel must be familiar with the occupational disease and injury hazards common to the industry, and with the means for their control.
6. In plants of 100 workers or over the medical services at the dispensary should be daily. Not less than one hour per 100 workers should regularly be spent on every work day in health conservation measures.
7. Such records in detail must be maintained as may prove of value to the employer or employed in the settlement of claims of any nature, or that may prove of value in the subsequent medical experience of the worker.
8. Such medical work as is carried out in the plant dispensary should be without cost to the worker. The expenses for such work as is not covered by industrial commission or insurance should be borne by the employer.

THE PRESENT EXTENT OF INDUSTRIAL MEDICINE IN SMALL PLANTS

With the aim of determining the present day status of small plant medical departments some 350 circular and personal letters were sent to industrial physicians, government departments, universities, etc. About 16 per cent of these have replied. The valuable information thus obtained could not be precisely tabulated. From these replies together with the information obtained from all other sources, a number of general conclusions have been drawn which we feel represent the situation at this time.

1. Less than 1 per cent of the sizable small plants maintain adequate medical departments.
2. Physical conditions and general health conditions of workers are in a lower state in small plants than in large ones.
3. Physical conditions and general health conditions of workers are better today than ten years ago.
4. Industrial commissions, factory codes, factory inspection, group insurance, national safety organizations, etc., have been of benefit in the health conservation in small factories.
5. Industrial injuries are generally well cared for at the present time.
6. The personality, the integrity, and ability of the physician in charge is the largest single factor in the promotion of industrial medicine.
7. No exact data on small plant medical departments are available from such organizations as the United States Public Health Service, Department of Labor, The National Safety Council, Conference Board of Physicians in Industry.

METHODS OF EXTENDING MEDICAL SERVICE TO SMALL PLANTS

Out of the efforts to procure these needed medical services for small plants, a number of approaches have been proposed:

1. The utilization on a full-time basis of a physician, not only for medical work but for such other activities as employment management, safety, supervision and personnel work. The assumption of all these duties by one person usually warrants the small plant in securing a high type of physician. This proposed approach is manifestly meritorious, but is

largely impossible through the fact that there are few physicians properly qualified in the several specialities mentioned. In mining enterprises this method has been most commonly employed. Success here is in part due to the fact that such an industry is usually conducted in isolated areas necessitating medical service for the families of the workers. Where medical service is limited to the plant premises a full-time physician is rarely justified when the number of employes is less than 300.

2. In some localities attempts have been made to solve this matter, through the association of several closely situated or related plants, for the purpose of establishing dispensaries and of employing industrial physicians and such other personnel as may be required to render health supervision to the several plants participating on a *pro rata* basis. In actual practice, this method has been successfully applied in a few instances. In other instances, it has failed as the result of unequal amount of coöperation from the plants participating. In Boston, work under procedures related to this method has been carried out by The Harvard Mercantile Health Work.

3. Another approach is to be found in the association of a group of industrial physicians, hygienists, safety engineers, statisticians, etc., for the purpose of rendering to small plants medical supervision in quantities and character suited to their needs. Such an organization daily and regularly spends a certain fixed time in the several plants. For emergencies, services may be had at the plant by communicating with the emergency physician held in reserve for just such purposes. Sanitary and safety investigations are conducted at such intervals as may be deemed desirable from a knowledge of conditions obtaining in the several plants. This method has the advantage of supplying at a low cost to the manufacturer the services of a group of workers qualified in a variety of industrial health and personnel problems. Examples of this type of approach are to be found in the New York Industrial Health Bureau and The Industrial Health Conservancy Laboratories of Cincinnati.

4. Recently a health bureau for trade unions has been devised and is now in operation. While not designed for small plants, such plants may participate in its services, wherever the workers are thus organized. In the conduct of this bureau the union local appears to be the unit rather than the factory. This type of service has the advantages and limitations common to all service bureaus originating within labor organizations.

In addition to the foregoing, it has been found that in practically every industrial community medical organizations render services to industry, limited to the care of such emergencies as are covered by the State Compensation Acts. In this city (Detroit) there is found an excellent service of this character in The Michigan Mutual Liability Company. In California a similar enterprise is conducted under the designation " Industrial Medical Service." However effective this type of organization may be in carrying out surgical relief for injured workmen it may not be maintained that they are reaching the fundamentals of industrial health conservation.

SUMMARY

Ninety-nine per cent of industries employ 500 or less workers and utilize 60 per cent of the industrial wage earners.

Working conditions and health conditions of workers are generally lower in small plants than in large ones.

Less than 1 per cent of small plants have at the present adequate medical departments.

In the conduct of industrial medical work, emergency relief is not sufficient. Continuous supervision of physical working conditions, accident prevention, and physical examinations are essential.

Industrial medical work should be carried out on the factory premises.

The monetary returns to the manufacturer from a properly conducted medical department warrant his generous support.

ABSTRACT OF DISCUSSION

A. B. EMMONS, M.D., 2ND

I wish to cite an illustration of small plant health activities. Some eight to ten stores employing about 1,000 have organized by getting a nurse and a physician. The nurse is full-time, the physician part-time. It was soon found infeasible to have a common health center or clinic because this offered opportunity for the workers to exchange views about their respective places of employment which tended to unrest. Each store must provide its own health quarters. Health need not be financed entirely by the industry. Allocate the cost, for instance, dentistry. This is now done in three of the stores. It is best to have the dentist *in* the store in order to save the time of the employes. The store should stand the cost of equipment and the time of employes. The employes should stand the actual cost of the work, which we have made $3.50 per hour. The dentist works on a three-hour basis of $10.50. The quality of dentistry is also of decided importance and dentistry which is done under the store's guidance is fairly certain to be satisfactory.

V. S. CHENEY, M.D.

What is the Detroit Medical Society's attitude toward the work done at the Ford plant? May I point out that statistics which I have read show that 85 per cent of industrial illness is due to mistakes in personal hygiene, less than 10 per cent to communicable diseases, and the remaining, approximately 5 per cent, to industrial health hazards. Hence, why charge industry with more than its share? In all of these we want fraternalism not paternalism.

GEORGE H. WOOD, M.D.

I would like to ask Dr. Selby* what proportion of industries have their health and medical work organization as a separate department or division. In many organizations the medical department is organized as a sub-department more or less under the control of some larger and supposedly more important department such as the employment department or legal department. This arrangement has a tendency to be oppressive. The physician is the best judge of medical problems, not the lawyer, employment agent, or, as sometimes happens, the nurse. I would point out also that it is needful that the physician devote personal time daily to his work and see every patient at least once, if possible, to give such instructions as may be needed, and not expect the employe to be satisfied if a nurse or attendant substitutes for him, even though he assumes general responsibility.

It affords me great pleasure, indeed, to assure Dr. Cheney that Dr. Mead, who is at the head of the Ford Motor Company's medical department, is a member in good standing of the Wayne County Medical Society and is a gentleman of the highest type of professional and personal honor and integrity. He is spoken of in the highest terms of confidence and esteem by all Ford employes whom I have ever heard mention him. I am sure that whatever medical problems he may have to contend with he is meeting in a spirit of candor, generosity and fairness.

C. D. SELBY, M.D., FELLOW A.P.H.A.

I would point out that the McCormick Works of the National Harvester Company, among others, has a dentistry department upon a plan very similar to the one Dr. Emmons discusses. I am quite sure that relations have much improved in recent years because the physician is getting on to his job better in industry. He is a better policy man. He now gets in and makes good. The industrial physician is easily adaptable ethically to the situation. We are not trying to socialize medicine nor to put all physicians on pay rolls, etc.

* *A.J.P.H.*, March, 1925, p. 209.

THE DANGER OF DECOLORIZING VACCINE VIRUS

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IN 1918 one of us in collaboration with Fielder and Watson reported observations on the use of brilliant green in vaccine virus.[1] It was shown that the bactericidal action of this dye in concentration of 1–10,000 was a very potent means of obtaining a relatively rapid reduction of the bacterial content of vaccine virus or even obtaining practical bacterial sterility. This dye in this concentration was found to have no measurable effect on the virus itself.

These facts had been applied to some extent in the manufacture of our vaccine virus but the use of the dye had not been made a routine procedure because of the hesitancy of physicians to use a virus having a green color.

Due to the recent great demands for vaccine virus the expediency of the use of the dye led to its greater use and today we are employing it as a routine.

Coplans in 1922 published observations verifying our findings.[2] He also noted that the green color was a drawback from the practical standpoint and investigated means of ridding the finished vaccine of the color. He recommended the use of sodium hydrosulphite as a decolorizing agent and stated that virus so treated remained potent during a period of fifteen months' storage at a temperature of 45° to 55° F. He stated, however, that some care is needed in the employment of this decolorizing agent, as an excessive amount of sodium hydrosulphite is capable of acting as a vaccinicide.

In extending our use of brilliant green we naturally had complaints about the color, and the recommendation of Coplans seemed worthy of observation and possibly of adoption.

Three lots of vaccine were decolorized by adding sodium hydrosulphite in a concentration of 0.25 gram per 100 c.c.; a quantity considered safe by Coplans. Clinical tests on children as well as rabbits were made over a period of three months; the vaccine being stored at 4° F. The continuously satisfactory "takes" seemed to warrant our marketing these viruses. They were accordingly filled in capillary tubes and vials and distributed.

Shortly we were in receipt of many complaints of vaccination failures. Because of the unfortunate failure of many physicians to keep a record of the lot or preparation number of the vaccine virus they use, there was a considerable delay before we became cognizant of what was wrong. It developed, however, that the decolorized viruses were at fault. This seemed inexplicable in the light of the fact that we were still obtaining 100 per cent "takes" in children and good takes on rabbits with the viruses diluted to 1–1,000.

There was this difference, however: the virus we were employing came directly from cold storage whereas the marketed virus had a delivery time of 24 to 48 hours during the warm weather of June. It seemed therefore that the virus must be defective in its resistance to higher temperatures. The available decolorized lots 361 and 363 were placed in the incubator at 37° C. for 24 hours and longer and then retested. As a con-

RESULTS OF RABBIT VACCINATIONS WITH VACCINE VIRUS BEFORE AND AFTER INCUBATION AT 37° C.

Number and Character of Virus	Relative Potency—Rabbit Test			
	Not Incubated	Incubated 24 Hours	Incubated 48 Hours	Incubated 72 Hours
361—Brilliant green & hydrosulphite	1–1000 + + +	1–10—	1–10—	1–10—
363—Brilliant green & hydrosulphite	1–1000 + + +	1–10—	1–10—	1–10—
366—Brilliant green	1–1000 + + ±	1–1000 ± + +	1–100 +	1–10—
375—Brilliant green	1–1000 ± + +	1–1000 ± + +	1–10 +	1–10—
388—Glycerol & Carbolic only	1–1000 + + + +	1–1000 + + ±	1–1000 + + ±	1–1000 + + *
388—Brilliant green	1–1000 + + + +	1–1000 + + ±	1–1000 + + ±	1–1000 + + ±
393—Glycerol & Carbolic	1–1000 + + + +	1–1000 + + + +	1–1000 + + + +	1–1000 + + + +
393—Hydrosulphite 0.25 gm. per 100 c.c.	1–1000 + + + +	1–1000 + + + +	1–10 + ±	1–10 +
393—Hydrosulphite 0.025 gm. per 100 c.c.	1–1000 + + + +	1–1000 + + + +	1–10 + +	1–10 ± +
393—Brilliant green	1–1000 + + + +	1–1000 + + + +	1–1000 + + +	1–1000 ± +
393—Brilliant green & hydrosulphite	1–1000 + + + +	1–1000 + +	1–10—	1–10—

* After 96 hours the glycerol carbolic virus failed to take at a 1–100 dilution whereas the brilliant green virus still gave a moderate take at 1–1000.

Tests were made by cutaneous insertion of virus in dilutions of 1–10, 1–100 and 1–1000. Where takes occur they are recorded in the table in terms of the highest dilution giving a take and the degree of reaction with this dilution.

trol two other lots of about the same age and strength were simultaneously incubated. Reference to the table will show that the viruses containing the hydrosulphite became practically impotent within 24 hours, whereas the viruses containing brilliant green deteriorated to the same extent in 72 hours.

The pulp from two calves was collected and ground in glycerol-carbolic. These viruses were utilized for comparative experiments. The results are given in the table. In comparing the results it must be kept in mind that some irregularities will necessarily develop due to the varying susceptibility of different rabbits. This probably explains the apparent contradiction that with virus 388 the brilliant green virus did not deteriorate as rapidly as the glycerol-carbolic virus, whereas with virus 393 the opposite result was obtained. Continued observations have shown definitely that brilliant green in the concentration employed has no appreciable vaccinicidal action.

The experiments with virus 393 show very definitely the vaccinicidal activity of sodium hydrosulphite. This virus had a much greater initial potency than viruses 361 and 363. For this reason naturally complete loss of potency did not occur so rapidly.

The last observation would seem to indicate that the combination of brilliant green and sodium hydrosulphite was more markedly vaccinicidal than was the hydrosulphite alone. As noted above, rabbits vary in their susceptibility and conclusion cannot be drawn from the one observation given.

SUMMARY

The addition of sodium hydrosulphite to brilliant green treated vaccine virus as a decolorizing agent is a dangerous procedure. If the virus so treated is kept at low temperature no deterioration may be noted. At higher temperatures, especially as they approach 37° C., the sodium hydrosulphite (or its cleavage products) shows a distinct vaccinicidal activity and tends to quickly destroy the potency of the virus. Its addition to vaccine virus which is to be marketed is therefore to be condemned.

REFERENCES

1. Krumwiede, Fielder & Watson, *J. Infect. Dis.*, 1918, 22, 118.
2. Coplans, *J. Path. and Bacteriol.*, 1922, 25, 173.

SCHOOL MEDICAL INSPECTION IN NEW YORK STATE*

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IN 1913 the New York legislature passed a state-wide mandatory school medical inspection law. This measure was prepared and jointly supported by the State Commissioner of Health and the State Commissioner of Education. Prior to 1913 all school medical inspection carried on in our state was under the direction of health authorities. The two State Commissioners felt at that time, that far better results would be accomplished by transferring all health activities in the schools to the Department of Education for administration. The law as passed applied to all of the public schools in the state, except those in New York, Buffalo and Rochester, in which three cities the health department had organized the work and which opposed its transfer. Private and parochial schools were also exempted from the provisions of the law. This paper and the statistics given will deal with such schools in the state as come under the provisions of the medical inspection law.

The law provides in brief as follows:

1. That a school medical inspector shall be appointed for all public schools in the state.
2. That every pupil shall furnish a health certificate within 30 days after school begins in the fall, or be examined by the medical inspector.
3. That children found with symptoms of communicable disease shall be excluded from school and the health officer notified of such exclusion.
4. That the Commissioner of Education shall enforce the provisions of the Medical Inspection Law.
5. That the Commissioner of Education shall appoint a State Medical Inspector of Schools to enforce the law under the supervision of the Commissioner of Education.

The Legislature of 1924 amended the medical inspection law in the following manner:

1. To grant $1,000 state aid to districts that employ full-time school medical inspectors, and $700 to districts that employ full-time dentists, dental hygienists, nurses, health teachers, nutrition or other experts, approved by the Commissioner of Education.
2. Authorizing the board of supervisors of a county, with the approval of the Commissioner of Education, to establish school hygiene districts. When so established, a committee is created which is authorized to employ a full-time school health director. This committee consists of the city, village and district superintendents of the district, the chairman of the board of supervisors and the sanitary supervisor. The county pays one-half of the expense, the state the other half. (We now have one county in the state, Cattaraugus, in which the provisions of this law are in effect. We hope and expect to extend this work from time to time.)
3. To establish the position of eye and ear expert and to appropriate $4,000 for his salary.

It is gratifying to note that not one vote was cast against any of these amendments, in either house of the legislature. In addition to these amendments the legislature voted $3,000 for the salary of an assistant medical inspector for rural schools.

* Read before the Pennsylvania Education Association at Erie, Pa., December, 1924.

PRESENT ORGANIZATION

Medical Inspection Bureau: There are at present eight people in our Medical Inspection Bureau, in which the medical inspection law is administered. These include a chief school medical inspector with three assistant inspectors, a supervisor of nutrition, oral hygiene inspector, supervisor of nurses, and an eye and ear expert.

Definite duties within the field are assigned to each member of the staff, to whom full credit is given for success. Monthly conferences are held that each member may be familiar with the whole program and contribute, as far as possible, to its efficiency. The chief of the bureau supervises the whole program, correlating the activities of the several members of the staff.

One of the assistant medical inspectors gives his special attention to our health educational program, to the work in cities and large villages, to publicity matters and to the standardization of forms, bulletins, etc. A second medical inspector gives special attention to rural schools and to the control of communicable diseases among school children, and the third assistant, who is a woman, gives special attention to high school girls, to postural conditions and to several outside coöperating agencies.

Physical Examinations: During the past school year, 595,206 or 76.9 per cent of the pupils registered in our public schools were given a physical examination. These examinations were made as follows:

	Number examined	Percentage of registration
Cities	204,814	68.5
Villages over 4,500 population	76,825	77.3
Rural schools	313,567	83.3

It is interesting to note that more than half of the physical examinations were made among rural children, and that a larger percentage of the registered pupils were examined in the rural districts than in cities and villages.

Normal Children: There were 229,730 children reported as normal. These, with the percentages of those examined, were reported from the following sources:

	Number reported normal	Percentage reported normal
Cities	77,918	38
Large villages	34,331	44.6
Rural schools	117,481	37.4

These reports indicate that 38.5 per cent of all pupils examined were found to be normal. Under normal school children we classify those who are not suffering with any defect that interferes with their normal physical or mental progress in school.

Physical Defects Found: Among the 595,206 children examined, 605,028 physical defects were found. These were reported as follows:

Cities	221,424
Large villages	69,327
Rural districts	314,277

For every 1,000 pupils examined the following numbers of physical defects were found:

	Last year	This year
City schools	1,006	1,080
Large villages	940	902
Rural schools	1,003	1,002
Average for State	997	1,016

More thorough physical examinations are being made in many of our cities than in large villages and rural communities. This probably accounts for the larger ratio of physical defects found among our urban children. Our physical examinations are being better made each year.

The following table gives the order of frequency in which the various defects were found, and the number of pupils with each defect:

1. Teeth	214,340
2. Diseased or hypertrophied tonsils	116,757
3. Ten per cent or more underweight	59,293
4. Eyes	50,525
5. Defective nasal breathing	32,070
6. Skin or scalp	30,948
7. Lymph glands	27,738
8. Goiter	15,700
9. Orthopedic defects	9,430
10. Disease of heart	8,499
11. Disease of ears	7,992
12. Defective speech	5,024
13. Mental deficiency	5,012
14. Nervous system	4,691
15. Diseases of lungs	2,739
16. Abnormal behavior	1,224
17. Hernia	727

Physical Defects Corrected or Treated: During the school year, 268,710 various physical defects were corrected or treated. These were reported to us as follows:

	*Number of physical defects corrected	Percentage of defects corrected
Cities	135,036	60.9
Large villages	38,449	55.4
Rural schools	95,225	30.2

*Classified by size of community.

As might be expected the cities led in the corrective work, with 60.9 per cent, the villages came next with 55.4 per cent and the rural districts last with 30.2 per cent. The state average for corrective attention was 44.4 per cent.

The attention given to the various defects varied greatly as indicated by the following tables.

Children's Hospital Service: Special hospital services are available at a minimum expense, to deserving school children in about 130 hospitals in 90 cities and villages throughout the state. Practically the same rate is given to school children as is charged to authorities in charge of the poor for similar services. This amounts to a mobilization of the hospitals and dispensaries, and their attending staff, for diagnostic, corrective or other services to our school children. It provides hospital centers to which our school medical inspectors (of whom we have about 1,200) can take the children, where they are cared for like private patients and may receive the best modern attention in the various fields of medicine and surgery.

	*Number of defects corrected	Percentage of defects corrected
1. Teeth—Number of pupils	130,026	60.6
2. Ten per cent or more underweight	27,680	46.6
3. Skin or scalp	24,565	79.3
4. Eyes	21,538	42.6
5. Diseased or hypertrophied tonsils	18,722	16.0
6. Defective nasal breathing	6,417	20.0
7. Goiter	4,542	28.9
8. Orthopedic defects	4,286	45.4
9. Lymph glands	4,018	14.4
10. Disease of ears	3,049	38.1
11. Disease of heart	2,677	31.4
12. Disease of nervous system	2,056	43.8
13. Mental deficiency	1,530	30.5
14. Disease of lungs	1,499	54.7
15. Defective speech	1,032	20.5
16. Abnormal behavior	515	42.0
17. Hernia	313	43.0

*Classified by nature of defect.

Children's Service Hour: In addition to our hospital service, thousands of practicing physicians are coöperating in an endeavor to give proper attention to the health of the school child. Definite hours are designated by physicians, other than school medical inspectors, during which school children can be sent to them for special free service. We have never had an instance in ten years in which a physician or specialist, however eminent or busy, has refused to assist us in this work.

Children's Dental Hour: Several hundred dentists in the state have designated certain hours, either weekly or otherwise, when deserving school children may be

sent to them, without cost, for preventive or corrective attention. Like the physicians, the dentists have been more than generous in their contribution to this service.

Open Air Schools and School Rooms: We now have nineteen cities and one village in which open air classes are conducted. Approximately 1,000 children are receiving special attention in these classes. Those admitted are of the anaemic type, the poorly nourished, the pre-tuberculous or contact cases, the cardiopathic, and others needing the vitalizing influences of fresh air, sunshine, extra feeding and rest.

We find children in these classes suffer less from colds and other illnesses than do pupils in closed rooms, and that the former are more regular in their attendance. Nearly all of them improve rapidly, both mentally and physically. In from six to eight months most of them are returned to the rooms from which they came. Our experience with children in open air classes convinces us that every school child would be benefited by better air, more sunshine, proper feeding, and sufficient rest.

School Medical Inspectors: We have about 1,200 school medical inspectors in New York State. Ninety-one of these are engaged in cities, sixty-five in large villages and the rest in rural communities. Full-time school medical inspectors are now employed in eleven cities and in four villages. Since September, 1923, ten full-time school medical inspectors have been added to the service. These full-time physicians devote the regular school hours to the service and receive from $2,500 to $4,000 for ten months' service. In rural communities our school medical inspectors are paid from 50 cents to $1.50 per examination.

School Nurses: In New York State 258 nurses are now employed by school authorities. With few exceptions they serve full time. Cities have 133 school nurses, large villages 49 and rural districts 76. In addition to these, 243 nurses employed by outside agencies are doing some work in schools. The average salary paid to city school nurses is $1,568, to village school nurses $1,318 and to rural school nurses $1,548. Nearly all of our school nurses are certified as health teachers. High school graduation and six semester hours of post graduate work are now required to qualify as a health teacher. Nurses occupy a very important place in our school health program. The efficiency of the service in any community is largely determined by the efficiency of the school nurse.

Nutrition: There is no part of our program that has advanced more rapidly or satisfactorily than that of nutrition. Scales are now in use in all of our cities, in 61 of our 71 large villages, and in 610 rural schools. Forty cities and thirty villages have scales in all of their schools.

Periodic weighing of all or part of the children was done in 72 cities, in 65 large villages and in 538 rural schools.

These weights were taken as follows:

	Cities	Villages
By teachers	19	10
By nurses	44	44
By physical directors	9	11

In the rural schools, practically all of the weights were taken by teachers. Except for the weights taken at the time of the annual examination, all periodic weighing should be done by the teacher to insure her interest and the best results.

Milk feeding at school was reported to us from 47 cities and 47 villages, while hot lunches were served to children in 1,978 rural schools. With few exceptions the pupils pay either in part or in full for the food served to them. We are rapidly getting away from the nutrition class, which is too expensive and of practical value only for demonstration purposes, and applying our nutrition program to every school child. In doing this we are making a special effort to interest class-

room teachers in food values and good dietary habits, so that they may teach and train their pupils.

All of our ten state normal schools have made instruction in nutrition a regular part of their educational preparation for pupil teachers. We now have four cities, one large village and two counties in which a supervisor of nutrition is employed for that purpose.

Oral Hygiene: Parents, teachers and pupils are taking an increasing interest in mouth hygiene. Physicians and dentists are more and more appreciating the relation of a good dental equipment to good health, and the influence of well balanced nutrition and normal systemic functions over a good dental condition.

School dental clinics are conducted in 36 cities, in 24 large villages and in 2 rural communities. Dental hygienists, who occupy a relation to the dentist similar to that of the nurse to the doctor, are now employed in 25 cities, in 7 large villages and in 2 rural sections. There are 100 places in the state in which oral hygiene work is carried on in the schools. Much volunteer service of which no record is kept is also rendered by dentists. During the past year, the State Dental Society conducted demonstrations in 20 places in order to show the practical educational value of the hygienists in oral hygiene work.

General Considerations: In our program of school medical inspection and health service, we endeavor to accomplish certain things, among which might be mentioned:

1. To secure the confidence and coöperation of parents. Parents should feel that next to the home, the school is the party most concerned in the welfare of their children.

2. To interest the children to become active participants in the whole health program. Children should be made to feel a personal responsibility in their individual health and in that of the school.

3. To interest teachers in their personal health, and in that of pupils and the community. *The teacher must be a health leader,* or director of her class room. She must radiate health and make it contagious.

4. To induce education authorities to recognize health as a major subject in the school program. *No system of school medical inspection can succeed unless its needs and value are appreciated and properly supported by school authorities.*

5. To encourage liberal financial support for the work. *Economy applied to the health of the school child is expensive business.*

6. To make the program as simple as possible and yet have it efficient. Many of our systems of school medical inspection, like most of our school systems, are too complicated to be effective.

7. To apply daily the program to every child, and to the whole child, mentally and physically. *Mental health and physical health should go hand in hand* throughout the life of the child.

8. To induce physicians in general, and school medical inspectors in particular, to take greater interest in school health, and to contribute more to its efficiency. It is impossible to have efficient school medical inspection without the right kind of medical service and direction.

9. To remember that school medical inspection and health service does not mean the practice of medicine and dentistry, but the inducement or encouragement of parents to seek proper medical and dental service for their children.

10. To correlate all health activities to one common end—mental and physical health. Health itself is but the proper correlation of the various functions of the body.

11. To encourage practical coöperation with all agencies interested in child welfare. We must remember that we cannot coöperate alone. Get and give all the coöperation you can.

12. To endeavor to do our best in our special field of activity, that we may encourage others to do likewise. Success is contagious. The success of one stimulates others to succeed.

VALUES IN THE CONTROL OF COMMUNICABLE DISEASE*

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THE ESTABLISHMENT of values in public health work is a most delicate task. There are methods of fixed value in the control of communicable diseases, which are applicable to all communities at all times. They are few, however. There are still other procedures which may have a very restricted range of application. One should not lightly condemn procedures that are particularly favored in some one locality, even if they are at variance with the views which most of us hold. At these conventions one very frequently hears things brushed aside that may, it is true, seem to have little or no value or be of only local interest, but which may later be resurrected and proved to be of inestimable service.

There are public health activities which, while they bring no immediate or large dividends, nevertheless have a peculiar value because of the educational influence which they may exert or because of their news and publicity value, interpreting these terms in a dignified sense. We must not frown upon the health officers who essay to depart from the severe and exact methods of those who score and weigh the value of every activity with meticulous care and precision. The free play of individuality and initiative, and particularly the dramatization of public health values, should not be discouraged. One may carry out a health program freely, very much as a musician gives his individual interpretation to the music he attempts to render. There is a permissible and desirable latitude in modulation of dynamics and in the mode of bringing out the themes, or in giving significance to the embroidery and subordinate features of the music. The thing that I would most emphasize is the avoidance of assigning rigid values to various activities so that they assume the force of tradition and discourage the spirit of enterprise and experimentation.

We heard Dr. Harrington yesterday describe his rather daring experiment in Minneapolis.* It was splendid that he should have had the opportunity to put his theories to the test, though many of us differed with him as to their value and practicability. It is helpful to all of us that there should be some field in which the new could be tried out, though the values of the effort remain to be determined.

So far as I can recall at the moment there has been no striking innovation during the last decade in our procedures for the control of communicable diseases, except it be the elimination of terminal fumigation, and the advances in immunology, especially relating to pneumonia, diphtheria and scarlet fever. Isolation and quarantine, whose value was seriously challenged yesterday at one of our meetings, maintain a firm and deservedly fixed place. I assume that Dr. Chapin has not abandoned the views which he so well expressed in 1913, that " The control of the infectious diseases seems to be the most important, and one of the most

* Read at the General Sessions of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1924.
[Editor's Note.—This is the fourth paper of the series on Values in Public Health Work. See the *A.J.P.H.*, January, February and March, 1925.]

* See *A.J.P.H.*, March, 1925, p. 232.

effective departments of public health work. Efficient medical inspection in typhoid fever, summer diarrhea, scarlet fever and diphtheria certainly prevents the extension of these diseases within and without the family. This is most apparent in the history of such work in small communities. Perfunctory inspection or perfunctory advice amounts to little, and is, therefore, wasteful. Efficient inspection would cost little more and would yield results well worth the cost." That, it seems to me, expresses the present viewpoint of the foremost administrators in public health in this and other countries. Isolation and quarantine have been questioned and discredited only where they have not been efficiently enforced or where measures have been applied in a routine and indiscriminating spirit, without regard to the practical difficulties in a given situation, or where the procedures hark back to the days of tradition and take no account of progress in our knowledge of bacteriology and the modes of transmission of infection.

There are many other well established procedures, such as placarding, home supervision of quarantine, and procedures of a like nature with isolation and quarantine, which are employed in public health, and which are so familiar and almost elementary that it would give offense to detail them. They have an abiding value, however, and they deserve to be continued with such modifications as would seem to be indicated under varying conditions. Many circumstances suggest themselves to the person of intelligence which indicate the mode and degree of their application. One cannot transport or translate any set of fixed rules or standards into various communities without the exercise of discernment and judgment. Judgment cannot be standardized, neither can it be imparted or bestowed where the capacity for its exercise does not exist. In the final analysis, therefore, the determination of the individual procedure best suited under a given set of circumstances must reflect the quality and degree of intelligence and training of the local health officer. There is no one prescribed method or rigid formula, no matter by what learned group it may be sponsored, which can be accepted as the established method of procedure. There is a tendency to discourage individual methods, and to stretch or hack off the limbs of public health administrators to fit into a Procrustean bed.

On the other hand there are certain basic facts, which have a more or less definite scientific foundation, which should be adopted by all health administrators of the American continent. For example, the incubation and quarantine periods of the communicable diseases should everywhere be uniform. We are exposed to ridicule as being utterly lacking in knowledge and harmony while there is a great diversity as to this and kindred matters.

There are procedures of questionable value as to which much fuss and fury exist. For example, the examination of food handlers as at present conducted in large cities is very debatable. I say that advisedly because it was my privilege in 1915 to inaugurate the first municipal clinic for the examination of food handlers in this country. Though we fathered the idea, we have come to realize its inadequacy as it ordinarily must be carried out. It is often only a protective gesture or, to be very generous, a mere entering wedge, which in a manner may introduce people to the value of periodic health examinations, and may have other indirect benefits. As an effective measure of detecting and controlling communicable diseases in food handlers, it is of doubtful value unless it can be done very frequently and most thoroughly. To give value to this and other procedures for the control of communicable disease, an adequate budget is a prime requisite.

Often a time-honored and universally approved activity may prove barren—a waste of effort, time, and money—if it is performed in the lackadaisical and uninspired manner of the routine public health

hack or job-holder. For example, the filing and tabulating of reported cases of communicable diseases, and even the enforcement of the reporting of communicable diseases, are procedures which are often carried out without purpose, vision or method. By and of themselves they offer no immediate benefits. Yet, if they were to be abandoned, a clamor would arise from vital statisticians and others, and they would, with reason, condemn us for attempting to sail without light or compass. It could be pointed out with justice that in so doing we were losing a valuable, if not the only, means of orienting ourselves and keeping our bearings in our work.

The familiar round of administrative duties by which we seek to control communicable diseases is a valuable and as urgently needed as ever and is now as in the past the very heart of a health department's organization. However, our success in the control of communicable diseases in so far as it is possible to control them is the result not of our efforts alone.

As public health administrators, we utilize many agencies. We lean most heavily upon the sanitary engineer. We are greatly beholden to the members of the latter profession for some of the signal achievements in the control of communicable diseases for which we, and not they, receive fulsome praise. We cannot too often or too emphatically express our indebtedness to our friends and allies, the sanitary engineers. We utilize the laboratory to secure the manufacture and distribution of biological products for immunization, and we receive invaluable assistance from its technicians in the early diagnosis of communicable diseases. More and more we are learning to capitalize the services of nurses. We are just beginning to realize the possibilities for aid in the education of the public which school teachers can offer us. The newspapers are or should be our chief means for disseminating information.

Finally, we must depend in increasing measure upon private physicians whose obligations to protect the public health have in too many ways been delegated to us. These facts are elementary, trite, and almost axiomatic; but they need to be frequently stressed.

In our appraisal of values in the control of communicable diseases we must accentuate and seek to magnify and expand the rôles which the sanitary engineer, the nurse, the school teacher, the private physician and the newspaper editor should perforce be made to play in the future. The time is already at hand when the public health administrator need be a man of broad medical and social training, a guide, an interpreter—an impressario in short—who assigns to each of the important actors a suitable part, and who, by his tact and diplomacy can prevent friction, misunderstandings, jealousies and indifference on the part of those who should play leading rôles. A concert of forces, or, in the vernacular, team-play, should be the product of his inspiration, his example, and his statesmanship.

While I have urged as strongly as I could, the value of isolation, quarantine, and similar procedures, it must not be overlooked that the health officer of the future will be a student of social conditions, economics and housing conditions. He must be ready at all hazards to interpret to the community the cost of unfavorable economic conditions, in wasted lives, premature deaths, preventable sickness and their resultant social tragedies. It does little good to talk and write out little academic homilies and commonplaces about the value of proper housing, an adequate dietary, and social and economic factors that make for health and increased powers of resistance, while we close our eyes to the fact that large portions of those whose guardians we are, earn a wage scarcely above the starvation level. Our advice, no matter how sound it may be, is often as utterly inappropriate, as maddening, and as indicative of a lack of knowledge of the facts of life as was the counsel of Marie Antoinette to

the hungry mobs clamoring for bread, that they eat cake. In the final analysis, the interdependence between an effective control of communicable diseases and economic conditions is so intimate, that we ought to study the latter more thoroughly and dispassionately, and seek to drive this fact home upon legislators, civic groups and others with all the force at our command.

If, for example, we confine ourselves to advocating and putting into effect medical safeguards for the prevention of hookworm diseases, we have fallen far short of our duty. We must make clear to all and sundry how hard economic conditions may not only deprive persons of the wherewithal to purchase shoes to protect their feet from infection, but be responsible for the mental and physical backwardness and disease of a whole community. We are not asked to become soap-box orators and to harangue mobs as to these conditions. Ours is the opportunity, as clear-thinking, humanely inspired medical men, to offer disinterested testimony. Philanthropy and the doling out of free medical service to the poor is no substitute for constructive efforts to promote health and human welfare through social diagnosis and social therapy, even at the hazard of being denounced as "radicals."

The value of many of the commoner measures for the control of communicable diseases has been appraised time and time again by those more competent and possessed of a greater degree of authority. I am concerned that we appraise the value of those activities too generally neglected which have an indirect bearing upon the prevalence of communicable diseases. We stress too little the significance of an inadequate wage and of insanitary conditions of the industrial environment, which, among other things, may tend to rouse into activity latent tuberculosis or increase respiratory affections or other communicable diseases. We preen ourselves too often on the volumes of printed and verbal instructions that we unloose upon our respective communities. We glow with enthusiasm over what we deem a neatly turned phrase in our health literature. To assume that it imparts a corresponding thrill, or conveys an impressive message to others, is an all too common delusion. It would be unjust to deny that our health literature and lectures have a measure of value, albeit an uncertain one. But education is far less effective as an agent for the promotion of health than is an adequate family budget.

As housing conditions improve, permitting families to enjoy not only an abundance of sunshine, fresh air, and personal comforts, but to have space for separate beds, the transmission of disease is sensibly diminished. Julia Lathrop, speaking in 1918 before the now defunct Sociological Section of our Association, aptly pointed out a fact whose many social and economic implications assume force upon reflection. She said that if she were told how many bathtubs there were in any community, she could with fair definiteness estimate its infant mortality rate. It may be true, as those who have a superiority complex assert, that the bathtub may be employed as a glorified coal-bin, but in the end the people awaken to its real value, and the relative sufficiency of income which it betokens eventually brings knowledge and general improvement.

The recent war brought sharply to our attention the devastating effects of poverty. Germany, with all its knowledge and machinery for the prevention of disease, was plunged into starvation through economic bankruptcy, and tuberculosis ravaged its population in defiance of all that mere science and learning in preventive medicine could do. What happened to that nation, which only a decade ago was in the van of progress, is most forceful proof of the public health value of an adequate wage, and a hint that Pandora's box was a trifle compared with the evils flowing out of war, and poverty in particular.

This Association should be made an ever vigilant, ever eloquent spokesman

for the great body of public health administrators, interpreting, teaching and leading legislators and citizen groups in general to an understanding of the significance and values of these latter problems to which I have alluded. The social and economic factors that determine the health of a nation transcend in importance the conventional and commonplace pre-occupations of the stodgy, timid and visionless health officer. Our Association is justly proud of the achievements of its members in the academic and scientific studies. But, more than this, we need vocal, stalwart, and inspired leaders who will translate these studies into terms of a higher and broader social service, and who will thereby effect a happy union between sanitary science and social science.

WATER SUPPLY AND PURIFICATION*

THIS PROGRESS report follows the recent custom of calling attention to a number of features of interest with a view to promoting discussion.

1. Perhaps the item of greatest interest to sanitary workers in the water supply field is the decision of the Supreme Court of the State of Pennsylvania reversing the decision of the trial court which denied an injunction in the coal mine drainage suits. The Mountain Water Supply Company which supplies the Pennsylvania Railroad system in southwestern Pennsylvania owns a large impounded reservoir on Indian Creek above which are numerous coal mines owned by the Melcroft Coal Company and other companies. These coal mines discharge acid water into Indian Creek above the reservoir. The County Court denied the injunction but the Supreme Court has very recently directed that an injunction be issued against the pollution.

It reviews in an interesting way various other precedents and also deals with the rights of riparian owners. It states that "it has always been under our (Pennsylvania) law a nuisance to pollute a stream from which the public gets its water supply." These proceedings deal with the application of the common law and not the violation of any statutes. Whether or not this suit is appealed to the federal courts, it is bound to make important history in the matter of control of pollution as relates to protection of public water supplies.

2. The application of an iodine salt to the water supply at Rochester, N. Y., during two weeks each year has been continued. The procedure has received much discussion and has developed its strong proponents and opponents. There does not seem to be much if any room for doubt about small amounts of iodine salts, taken internally, constituting a preventive of simple goiter. Opinions vary, however, as to the best form in which to supply this substance.

While discussions of interest and importance are pending, data are being accumulated to show the location and extent in the deficiency of iodine in various sections of the country, particularly around the basin of the Great Lakes system. Although this general locality seems to be an area where water supplies are low in iodine it should not be taken for granted that all water supplies in this area are deficient in this element; neither should it be assumed that there is no deficiency in the salts of iodine in waters from localities far removed from this area.

* Report of the Committee on Water Supply and Purification presented to the Sanitary Engineering Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1925.

3. Water purification programs have continued to proceed on a large scale and at many places. During the past year water filters have gone into service at Detroit, Omaha, Sacramento, Memphis and Richmond, as well as at numerous smaller cities. Many other large cities are proceeding with enlargements to existing filter plants and, generally speaking, it may be said that gratifying progress is being made in the application of the art of making public water supplies pure and wholesome. In 1923 extraordinarily high turbidities were encountered in many river waters, particularly west of the Mississippi. This has caused much study to have been given to means of removing sediment continuously from settling basins with the aid of mechanical devices, rather than by the earlier custom of emptying basins and flushing the accumulated mud from them. The latter custom, in vogue for generations, proved very bothersome in the late summer and fall of 1923 at Omaha and elsewhere and interfered seriously with the normal quality of the supply. The continuous cleaning arrangements under consideration are similar to those employed in cleaning sedimentation tanks used in sewage treatment and in water softening processes.

4. Interest has been revived in studies of the filtering media of rapid sand filters by the recent announcement of work done at Baltimore, showing an unsuspected biological activity, associated with the sand clogging.

5. Water softening has received more attention than has been the case for some time previously. A plant of 20 million gallons capacity has been put in service at South Pittsburgh, in order to make suitable a water supply derived from the Monogahela River with its well-known acid content from coal mine drainage during certain months of the year. At this plant, as well as at the softening plant at Benton Harbor, Mich., apparatus is installed for the continuous removal of sediment from the basins. In the water-softening field one of the leading questions for consideration is that of re-carbonating the softened water in order to avoid lime accretions in the pipe system. Good results have been reported at Defiance, Ohio, where coke is burned in a special furnace to produce carbon dioxide necessary for re-carbonation. At South Pittsburgh the softened water receives a pre-determined quantity of untreated raw water. At Columbus consideration is being given to utilizing the gases from the smokestack of the pump station for re-carbonating the softened local supply.

6. Along with the demand for a better quality of water, and improvement in purification facilities, there is coming to be recognized to an increasing extent the responsibility of the water department for good physical qualities of the water as drawn from the consumer's faucet. This means that adequate purification at the plant is not in all cases sufficient where the water is made attractive and of good bacterial quality.

The behavior of the water in contact with the distributing mains, service pipe and plumbing often causes annoyance to the consumer on account of rusty water; and at a number of water works plants it is found necessary to extend the water treatment in order to combat the tendency towards corrosion. Baltimore is a well known example. At Memphis the removal of a very high content of carbonic acid by means of aeration incident to removal of iron produces a non-corrosive water which is very gratifying in contrast with former conditions. Another feature of the corrosion subject is that of the possible action of the water on lead service and plumbing and the imminent danger in some water supplies of harmful effects upon consumers on account of plumbism. This is an old story but the basic facts are unescapable and the subject needs to be rehearsed as long as danger exists.

7. Aeration has been made a feature of some recent purification plants, as at Norfolk where a long spilling table with

splash steps has been provided; at Richmond where a bank of spray nozzles has been used; at Cambridge where the riffle board idea is employed and at Sacramento where use is made of a novel form of self-adjusting or "floating" nozzles. These devices all deal with surface water and are aside from the aeration provided at certain iron removal plants. Mention also should be made of the aeration employed in certain Ontario plants, using compressed air applied through a diffuser plate.

8. Committees acting for the Treasury Department are still engaged in formulating a new standard for judging the quality of water supplied on interstate carriers. The tentative standard has already been offered for public discussion by technical bodies, but a final recommendation has not been announced nor a new standard promulgated.

GEORGE W. FULLER, *Chairman*
W. H. DITTOE
G. G. EARL
C. G. GILLESPIE
PAUL HANSEN

DISCUSSION BY C. G. GILLESPIE, FELLOW A.P.H.A.

I have just one thought to suggest and that is that the Committee give some notice to instances sometimes seen where cities commit themselves to remote and expensive sources of supply, considered of virgin purity at the time, rather than to purify at less expense a less clean source near home. We are having an interesting example of that situation in California.

On the recommendation of an Engineering Commission, composed of A. P. Davis, George Goethals and Wm. Mulholland, the East Bay cities are about to vote on a bond issue of $39,000,000 simply to bring in a supply from the Mokelumne River 90 miles distant. The commission reported against a filtered water supply from the freshet waters of the Sacramento River, which would cost about $8,000,000 for the same capacity of works. Their objections to the Sacramento River were that the stream received sewage and would not satisfy the aesthetic sensibilities of the consumers. Mr. Davis is now preaching the failure of filtration and deplores the use of chemicals in water treatment. The cities seem to reason that because Los Angeles and San Francisco have gone long distances for their water supplies, that the East Bay cities will suffer in comparison if they do not do likewise. I should mention that both supplies involve pumping the water the same elevation.

A good editorial appeared in *Engineering and Contracting* on this subject a couple of years ago,* and we have referred to it on several occasions during this campaign. I beg to quote it:

"Increased demands for water for use by cities, and the lessened opportunities for securing uncontaminated supplies, are vastly increasing the use of purification systems. Easily available supplies of pure water have practically ceased to exist—either because they have long since been appropriated or because habitations and industry have expanded over watershed areas that once were clean.

"Cities that formerly had abundant supplies of good water have increased in population beyond expectation at the same time that per capita consumption has increased, until the old supplies have become entirely inadequate, and the cities have been forced to augment them with water brought from a great distance or with water purified from what was once considered a wholly unsuitable source.

"In the public mind, there still lingers the idea that pure water can only be had from a pure source, and so strong is this idea that it sometimes leads to the expending of needlessly large sums in bringing water from a distance, when much cheaper and equally wholesome supplies could be had by taking water near at hand and purifying it by approved modern methods.

"More instances of this sort should not occur, for the waste of public funds is as inexcusable as is the waste of private funds.

"Engineers and engineering societies should harp before the public on the fact that by proper treatment an admittedly contaminated supply may be rendered thoroughly suitable for domestic consumption, and may, in fact, be much purer than a vastly more expensive supply brought from a distance without purification."

* The Rising Importance of Water Purification. *Engineering and Contracting*, Nov., 1922, p. 59.

NEWSPAPER PUBLICITY*

E. G. BURROWS

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I WANT TO concentrate on some of the ways and means of telling it in substance to "Sweeney," as Mr. White has said. I think the first thing we have to remember in considering how to get into people's minds questions which interest us is the bombardment to which every one is subjected by all sorts of people who want to convince him of something or perhaps try to sell him something. Life in the city today is like the main street of a country fair. From morning to night there is a cannonade of publicity of one kind and another, and any particular kind of publicity has to compete with that.

PEOPLE MOST INTERESTED IN WHAT IS NEAREST

Now we have some general rules as to what kind of thing interests people. The first is that they are interested primarily in themselves. In that respect, health work, I think, has an advantage because it is always easy to appeal to anyone interested in his symptoms. Whether the subject is disease or pride in manly strength or "that school girl complexion," there is direct appeal. People's interest extends in proportion to the distance from them; that is, subjects which are near in time or place or close to one's natural interests are interesting. Mr. White has already pointed this out in the infantile paralysis story. He spoke of a newspaper peg to hang it on, meaning an account of what was happening in infantile paralysis at that time and place. People wanted to know if it was better or worse in that town just then.

AN EMOTIONAL APPEAL

Then, in addition to this interest in one's self and things near, there are two kinds of appeal which printed matter can make—intellectual and emotional. You can see for yourself that the emotional appeal is quicker and wider. Notice which stories in a newspaper you read first. Look at the top of this health extra. I think you will feel it is a bit heavy. As soon as things are solid and heavy there is danger of their being or seeming dull. I think there is no rival to that milk story. It is a little difficult to analyze the emotion there. There is surprise—the train running on milk.* There are lots of emotional stories connected with health work. One of the most effective appeals is to horror and there is a lot of that for the health worker. That full page advertisement for venereal diseases has an inescapable appeal. Almost any one will feel the horror of that.

Another story that used that same kind of appeal in a gentler way is the one about the illness and death of the President's son. Emotion is used there as a means of introducing information about serious results which may follow trivial injuries and abrasions. If you were to begin with "Trivial abrasions" it would not hit, but beginning with the death of the

* This discussion by Professor Burrows and others followed the reading of papers on "The Newspaper Man's Point of View," by Lee A. White, and "The Health Worker's Point of View," by Philip P. Jacobs, Ph.D. (See *A. J. P. H.*, Jan. and Feb., 1925), before the Health Education and Publicity Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Mich., October 23, 1924.

* The story referred to was head-lined "Milk only fuel, five-car train hauled 6 miles. 200 persons see demonstration of practical fuel value of food."

President's son is like making an opening in the line in a football game. The story can go through then.

There is an idea in the minds of many people that an emotional appeal is less dignified than a statement of facts and principles. Perhaps it is, but to get the larger audience the emotional appeal is necessary. Another way to get it is to dramatize the principles and facts by presenting them in a picture or a story. Instead of a general statement of conditions, picture their effects on one family or one person, and always here and now—in this city, this week. I cannot find very exact examples of little dramas of that kind being used to introduce statistics. The value of statistics is unquestionable, but people are a little reluctant to grab hold of them. If they get a story first, then they are ready to take the statistics about it. Another reason for the emotional appeal is that the newspaper reader, weary of being bombarded with publicity or facts, turns with relief to something amusing or exciting.

THE LEAD OF THE NEWS STORY

With regard to method, you must know, I suppose, that the American newspaper practice is to put the high point of interest in a story at the beginning, or just as near the beginning as it can go. I have illustrated that already in speaking of the use of a story to introduce statistics. The story was the high point of interest. It may not be the high point of general significance. A newspaper man in writing a news story worries chiefly about the lead. His feeling for what will appeal to the passive mind of the newspaper reader determines what he will choose to feature, and when that is found the thing to do is to put it right in front of the story. A clear example of that is this same story about the death of the President's son. It is not perfectly done, because the illness and death could come a little nearer the front, but that is a detail. The story about the mad dog begins with "A mad dog" and that scares any one unless he is trained to know that probably the dog is not mad and the story need not bother people much. If the reader believes the dog is mad, the first three words of the story capture his interest through the appeal of fear.

This opening sentence of a story from Akron, Ohio, entitled "Defects," is a good beginning but not perfect: "Need for closer attention to the health of children by parents is shown in the report of Akron's public health department that last year 15,266 physical defects were found in 6,268 school children." The weak point about it is that it does not give a rough surface for the loose mind to grip on. The kind of thing that would give such a surface would be to pick out some particular disease. A statement that a lot of children were suffering from some particular defect and that the situation was worse than people thought, would give readers something to hold on to and to carry them through the rest of the story.

DISCUSSION

Question: What would you say to opening this article with the question, "Has your child a physical defect?" Would that be considered an effective opening?

Professor Burrows: I should say that it is a little better, but better than either would be to present a dramatized picture. I was thinking about that mad dog as being an effective beginning, but if you said there were 1,672 mad dogs it would not be so effective as if you said there was just one mad dog coming at you with his mouth open. That would give you something to think about. Your suggestion is better than the one used, but better than either is a picture of one situation made as individual as possible and as close as possible to the reader's own way of thinking. What happened to one child

is perhaps better than what happened to a thousand children. I am not sure you can generalize to a certainty on that because what happens to a thousand of them is often impressive, but a definite picture that hits the emotions of the parents is a better way of getting at it.

The points I have been specially anxious to bring out are the necessity of making an emotional appeal and of making the appeal in the beginning of the story.

Mr. White discussed the question: How can the headlines be controlled?

You have no way to control the headline writer except to control the reporter. Any good headline writer is bound strictly to the terms of the story in his hands, and the story is written not by the headline writer, or the copy reader, as we call him, but by the reporter. You must get back to the first principle and control the reporter by controlling the news. You have an appeal from either to his responsible chief.

I had an experience with a philologist in the west who asked me to get a notice in the paper regarding a philological society convention. He came to me later and complained that it was not printed. I said it was and it became a question of facts. I asked him what he looked for in the paper. As I suspected, he was looking for a headline stating "Washington Philological Society Will Meet on Thursday," or something of the kind, and I said "If you will look on the back page of the *Post-Intelligencer* you will find "Eggs Were Cheap Five Hundred Years Ago."

The headline that he received was worth a thousand times more to him than the headline he conceived. Every member of the Washington State Philological Society knew a convention was going to occur and when, and where, and nobody else gave a whoop about it until I got hold of one of the members of the society who was going to report on a cook book of the early fifteenth century. In it was a cake recipe that called for six dozen eggs, and it proved they were worth at that time about a penny a dozen, whereas we were paying about a dollar a dozen in Seattle. *There* was human interest; and probably there were ten thousand people who read the story "Eggs were cheap five hundred years ago," though not two people would have read the notice that the Washington Philological Society was going to meet. What is more, many people came to hear the paper who never otherwise would have attended. Everybody concerned except the philologist who complained was right about it. If he wanted the world to get interested in him, then he had to talk in terms that the world would understand.

You can never stand up and read the encyclopedia and expect to have a newspaper man get excited about it. Of course, if you give a newspaper man an abstract, he will try to get in some of the weightier or more serious portion of an address. You can't cover up news, no matter how many words you use in the first and last paragraphs of your address. If you say something in the middle of it which is news, and the newspaper man is present, he will find it.

The Press Ninety-five per cent Non-sensational

I want to say that the miracle of the press is not in its inaccuracy but in its accuracy, and not in its sensational but in its non-sensational news. Most of the newspapers are more than ninety-five per cent non-sensational, but you do not read that part of the newspaper. You read the five per cent that interests you and think it is all sensational. I know that is true because I have tested it. The newspaper man is trying to cope with the public intelligence and lack of time. We never like to admit it, but the truth is the average American spends fifteen, twenty, or twenty-five minutes a day with a newspaper. We are printing around fifty to seventy-five thousand words a day in a

newspaper, and if a man reads the entire paper he is a miraculous reader. Are we going to talk about what he is interested in or what he is not interested in?

DEALING WITH REPORTERS

A Member: The thing I was interested in was a suggestion on how to control the reporter. We have in our city a committee of the county health department which is supposed to give out the news to the press. The press coöperates and generally we get along pretty well, but every little while something crops up that we do not seem to know how to handle. This particular instance was very disconcerting because it happened at a time when there had been some anti-diphtheritic serum specialists around who had been talking a good deal. We prepared a series of articles, none of which exceeded two hunded words, and paid for the space in one of the newspapers. The articles were to be printed verbatim, but we did not think of the headlines. A reporter, calling for one of the articles, asked, "Are these horses from which the serum is prepared well taken care of?" I answered, "Yes, indeed." That was all I said. The next morning this headline confronted me: "Diphtheria anti-toxin horses noted for their sleek appearance." Now anybody familiar with the appearance of an anti-toxin horse knows what a chance that gave the antis to come back at us and say we lied deliberately. So if there is any suggestion as to how to get around this headline business, I would appreciate it greatly.

Mr. White: I would like to say something in connection with the question that the gentleman asked regarding how to deal with reporters. You know the old adage that is given to women on how to deal with a man is "Feed the brute." I think that applies more or less in journalism. Just one diet a newspaper man lives on, and that is news. If you feed the brute, he is going to come to have a liking and respect for you and an understanding of your problems and a desire to coöperate with you. He is going to approach you, remembering you as his meal ticket; as a source of information which admits him to the staff of his paper and which admirably serves that paper. Of course, there is no treatment for the abnormal brute. Just as you have quacks in your body, we have fakers and blacklegs in ours. That is a misfortune, and you can't do much unless you can get to the editor or publisher and persuade him he has a bad type on his staff and should get rid of him.

You might have gone a little farther in regard to the horses. You might have told the reporter what you meant by "well kept" horses. You might have taken him to see a laboratory horse, which would have been an education for him and for his public. You might have done a whole lot with respect to educating the reporter so that he might have been prepared to meet the attacks of the anti-serum people or any one else who is ignorant or perverse in his attitude toward serums, vaccines or anything of the sort.

Certain restrictions are imposed upon a headline writer. He is under obligation to tell the essence of the news story in an exceedingly limited space, and not only that, but under limitations of form and space which you can't understand unless you have tried to write a sonnet. The newspaper man deals with type, which is made of metal. He always wishes he had rubber type so it could be expanded or compressed at will. He has, for example, two lines for the "key-lines" in which to write the essence of a lecture occupying a column of space. He is, in some offices, compelled to avoid ending one of the two lines with a preposition, or other weak word; he is compelled to avoid hyphenating a word and carrying it over from one line to the next; he is given arbitrarily, say, twelve and one-half units or letter spaces in which to say what he can put in one line, and

twelve and one-half units to balance it in the next line. These and other limitations, reasonable and unreasonable, all make for inaccuracy. They make for the coining of words that are faulty in expressing ideas. They make for the bungling of the truth in a great many instances. The way out we are not sure of, though one or two newspapers have attempted to find it.

The reporter is not the man to whom to appeal except in so far as he may have personal contact and influence with an individual as a colleague and may be able to bring a little pressure to bear on him by saying "You are making it hard for me, you are bungling the headlines." Just as we sometimes meet a bungler with a knife or a vial, so you will sometimes meet a bungler with a typewriter or a lead pencil. You should go above the copy reader, if you can't reach him through the reporter, and call specific attention to the inaccuracies and what the inaccuracies result in.

You have no idea how many things we do in a newspaper office to try to correct mistakes. We have one hundred and fourteen pages in the Style Book of the *Detroit News* (a book of instructions to copy readers and reporters to try to keep them on the right track). It even includes such matters as the ruling out of the word "toad-stools" in connection with mushroom stories. We know the people have the idea that toad-stools are poisonous and mushrooms are not, which is scientifically absurd. If we cannot correct their ignorance of mycology, at least we will not encourage it. We have to make rules and constantly educate new reporters and copy readers to these rules. If you cannot deal with the man direct, deal, if possible, with the editor himself or, as a last resort, the publisher, in order to get results.

Making the Front Page

Question: Can you give us, Mr. White, any information relative to the newspaper man's uses for his front page? About the relative value of space in a newspaper?

Mr. White: The American newspaper differs from the English newspaper, which distributes its news quite impartially throughout its pages and runs advertising all over its front page. We build a store window. Our front page is the display window of a department store of news. We carry everything in this store, but we put on display the things most likely to capture or serve or satisfy the public interest. That is unfortunate, because often it leads to a disproportionate sense of values.

The only way to crack into the front page is to appeal to the greatest possible number of appetites for information at one time. Now, there is not any blessed rule that can be given to you on that. Newspapers sometimes put what we call "sacred bull" on the front page; that is, something very dear to the heart of an editor or publisher. Also they sometimes put on the front page things whose values are governed solely by our sense of the public weal. If you look at the papers of Detroit of the last day or two, you will find spread all over the front page the Community Fund Campaign, which is certainly not there because of the general interest in it in competition with other news stories, but because we feel that we must create a public interest. If you can get a locomotive to run on milk, you don't need to ask me how to get on the front page; but if you want merely to discuss the statistics of public health for the past month, statistics without a high level in them, you won't get on the front page. If you can show statistically that your city is the purest and most healthy city in the United States, you may have space on the front page. If you can show that it is the worst in the country, you will get front page space, but if you show merely that it is an average town, the story will be buried in the back pages. If we murdered some-

body of importance or gave a million dollars to the Rockefeller Institute for such public health work as the study of insulin, or did something else notable, we would get on the front page. We are interesting for that, and not because we live to be seventy-two years old, and spend thirty-seven years of that time in the state of Iowa, and belong to the First Presbyterian Church and the Klan. Such simple virtues and vices have nothing to do with public interest.

CANCER AND GOITRE

INVESTIGATIONS of the possible actual relationship between goitre and cancer were prompted by the observation of several apparent relationships. The most goitrous country in Europe shows the highest cancer mortality; endemic goitre is a manifestation of the inadequacy of the thyroid gland caused by deficiency of iodine; liability to concer increases steadily after middle age, while the thyroid function diminishes; the goitrous thyroid gland is itself commonly affected by cancer; prophylactic administration of iodine to school children on a large scale in some of the most goitrous areas of Switzerland has in the last few years produced an astonishing decrease in goitre incidence; it has been the clinical experience of some physicians that administration of iodine has seemed to retard the rate of growth of malignant tumors in some inoperable cases.

In an attempt to throw some light upon this question the following principal lines of attack were commenced: To select one or more countries in which goitre is sufficiently common to give a reliable index of the degree of hypofunction of the thyroid in the populations of small subdivisions, and determine what correlation, if any, exists between goitre prevalence and cancer mortality in these different divisions; to select a country in which Graves' disease is sufficiently common to give some indication of the degree of hyperfunction of the thyroid in the populations of small areas, and determine whether or not cancer mortality tends to be less in those areas; to determine from a parallel series of cancer and noncancer post-mortem records whether enlargements or anomalies of the thyroid gland are more common in one group than in the other, and also to what extent the thyroid gland itself is attacked by cancer.

Complete investigations for Switzerland and preliminary studies in Norway and the United States of America present the following conclusions: (1) The distributions of goitre in recruits and school children and of cancer mortality in Switzerland show a small positive correlation which is apparently not accounted for by differences in healthiness as measured by the general death rate; (2) this correlation of general cancer mortality with goitre is found to arise from a very definite regional correlation between goitre and cancer of the stomach and oesophagus; (3) the selection rate of cancer for the stomach is generally high in other goitrous regions of Europe and America, and low in areas where goitre is infrequent, and this relation also holds good for subdivisions of Norway and the United States; (4) examination of 1,000 London post-mortem records leads to the conclusion that enlargements and other anomalies of the thyroid gland are considerably more frequent in cancer cases than in noncancer cases at death, and these anomalies are of types usually associated with depressed thyroid function; (5) the enlarged or adenomatous thyroid gland is attacked more frequently than the normal gland both by primary and secondary cancer; (6) after correcting as far as possible for all known factors, the mortality from Graves' disease in the counties shows a small negative correlation with cancer mortality; this is not so evident in the large towns; (7) the above findings seem to indicate that defective functioning of the thyroid gland is favorable to the incidence of cancer of the stomach, and possibly of other organs also; (8) this leads to the suggestion that iodine prophylaxis applied after middle age, on the same lines as it is now successfully applied to young persons in Switzerland for prevention of goitre, or some other form of thyroid administration, might result in diminishing cancer incidence. That it is likely to seriously influence the growth of cancer once started is not suggested, though retardation might result.—Percy Stocks, *Biometrika*, 16:364 (Dec.), 1924. A. W. B.

STANDARDIZATION OF THE WASSERMANN TEST

Part 2. Comments on the Proposed Plan

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COMMENTS on the proposed plan, an outline of which appeared in the March issue of the AMERICAN JOURNAL OF PUBLIC HEALTH, were received from but twenty-three of the forty-six laboratories within the time limit set for compilation of this report. The twenty-three laboratories include those of the United States Army and Naval Medical Schools, the Hygienic Laboratory, four state and two large municipal public health laboratories, eleven laboratories associated with hospitals or universities, one private laboratory, and two institutes for research.

Exact tabulation of the answers as for or against each requirement proposed proved difficult since many expressed general agreement but mentioned only a few points specifically. Including statements of general as well as specific agreement, two-thirds to three-fourths of the replies were favorable to all but a few of the recommendations, and less than one-third were definitely unfavorable to any single point.

Full and exact quotation of the various opinions on each question is not within the scope of this report, but the different points of view may be seen from the following abstract of the discussion of both the general and technical requirements.

I. *General Requirements as to Conditions*

The only recommendations in this section to which serious objections were made were those referring to the minimum number of examinations and to the terminology of the report.

Three laboratories (a private laboratory, a university, and a hospital laboratory) objected to a minimum of fifty examinations a week. Two contended that the test was quite as reliably performed in small as in large laboratories, provided the worker was competent. One stated that this requirement was sound, but that some excepting clause should be made for those especially qualified.

The recommendation that the report should not employ the terms "positive" and "negative" was opposed in six of the twenty-three replies. The criticisms were that the terms "positive" and "negative" were the only ones comprehensible to the clinician and that they did not convey a clinical diagnosis, but only the necessary interpretation of the laboratory findings.

The only important addition suggested for this section was a statement as to the apparatus and instruments to be used for the collection of blood.

Aside from the points discussed, and a few to which only minor objections were raised, the comments indicated that the general recommendations were considered both desirable and necessary.

* Referee and Sub-referee on the Wassermann Test of the Committee on Standard Methods of the A.P.H.A.

II. *Requirements as to Technique*

The policy of attempting to secure agreement on a few basic technical requirements, rather than entire uniformity, which was the main point at issue, was favored in sixteen of the twenty-three replies, five containing especial comments in support of it. Only two advised that a particular method now be offered—the Kolmer method* was recommended by its author, and the formulation of a tentative standard based upon previous investigations was suggested by another laboratory.

Of the actual technical requirements the two receiving most opposition were the employment of two antigens, and the use of fresh guinea pig serum only for complement.

The controversy over antigen alone illustrates the widely divergent viewpoints to be reconciled in any successful plan for standardization. One laboratory objected to the use of both plain and cholesterinized antigens because the interpretation was difficult if the results disagreed; another contended that if both antigens were standardized to give similar reactions, the test with the second antigen supplied merely a corroborative result, which could preferably be obtained with a precipitation reaction. Among six who discussed the type of antigen, five favored extracts reinforced with cholesterin. One laboratory, on the other hand, urged that the use of cholesterinized antigen be optional and that reactions obtained with such antigen be stated to have no legal significance.

The recommendation that the complement should not be more than forty-eight hours old was specifically or tacitly agreed to by thirteen and opposed by six. One claimed that complement containing no preservative deteriorated but little if stored for a week at a temperature of 10° C. or below; five recommended methods of preservation, but the maximum period of storage advised ranged from ten days to several weeks; so that this question, as well as that of the antigen, is evidently an important one to study.

Next in order of discussion were the requirements as to the quantities of the different constituents and the titrations by which these were to be determined. The specifications on these points, particularly in regard to complement, had intentionally been stated only in general terms, because the optimum amounts of the reagents are interdependent and admit of only relative definition. A number, therefore, criticized these recommendations as too indefinite, while others disagreed with the standards proposed.

With reference to the amounts of serum and spinal fluid for the test, one laboratory emphasized the point above mentioned, that no standard rule is possible, except when formulated with regard to the other factors concerned. Two recommended graded amounts of serum, and two suggested varying amounts of either serum or antigen for the purpose of a quantitative result.

For the limits on the amount of antigen a few urged standards different from those proposed but not less arbitrary. Two specified that the test-dose should not be more than one-tenth instead of one-fourth the amount which was anticomplementary, and three specified that the test-dose should be at least ten times instead of twice the least amount which was antigenic. The repeated titrations of antigen were commented upon by two as impracticable and unnecessary, and the large series of preliminary tests was objected to by four, two referring to this requirement as desirable but not essential, and one suggesting that 200 to 500 tests would be sufficient.

For the allowance of complement two urged more definite specifications, for example, two "units," but their definitions of the "unit" were not the same. The

* Three other workers, though not suggesting the Kolmer method as a standard, stated that they were using it routinely and considered it better than other methods tried by them. A fourth stated that the Kolmer method had shown no advantage over his own technique and was more complicated.

dose of amboceptor received little discussion. One prescribed "4 to 6 units" but stated that the method of determining the "unit" was unimportant; two stated that correction should be made for anti-sheep amboceptor in the patient's serum. Throughout the discussion of the quantitative relationships the need for a standardization of terms as well as technique was apparent.

The next essential point of disagreement was the method of fixation. The method proposed, four hours at 0–6° C., received the tacit or specifically stated approval of sixteen, while a shorter period of fixation at 37° C. was advocated by two. Among those favoring cold fixation, opinions differed as to the exact temperature limits, one recommending 4–6° C., one 8° C., and one advising 6–8° C. in preference to lower temperatures.

In addition to the technical requirements discussed, there were a few to which only one or two expressed objections.

The anti-sheep hemolytic system was not an acceptable standard for the army and navy laboratories because in the service sheep cells are less readily obtainable than human cells. With the anti-human system, amboceptor dried on paper was said to be preferred to fluid serum since the drying reduces its agglutinating effect.

Individual laboratories also suggested more strict limitations as to certain technical procedures in which a choice had been proposed, for example, the specific recommendation of a buffered solution for a diluent; the use of defibrinated blood only, because of the possible effect of impurities in anti-coagulants; a maximum period of 15 minutes for inactivation.

Modification of the requirements was suggested in regard to a few details, such as the methods of washing red blood cells and of combining the constituents of the test.

From the comments on this section, two principal conclusions can be stated: first, that coöperative work is absolutely necessary before an agreement can be reached on even the essential requirements of technique; second, that the technical questions most disputed, with the exception of the preservation of complement and a few minor details, are embraced in the three main problems which had been emphasized in the tentative plan, (1) the antigen, (2) the quantitative adjustment of serum, antigen and complement, and (3) the method of fixation.

III. *Subjects Requiring Further Investigation or Consideration*

The suggestions received for experimental work touched upon no phases of the reaction which had not been included in the tentative outline, but they showed active interest in certain questions: the antigen, the preservation of complement and the effect of different solutions as diluents.

As a way of approaching technical problems, four of those who responded suggested comparisons of methods. Kolmer, as previously mentioned, proposed the study and trial of the method developed by himself and his coworkers; another suggested the trial in coöperating laboratories of a standard method tentatively formulated from work already done; a third proposed the accumulation of accurate clinical data concerning the results of methods used in individual laboratories (without suggesting parallel use of the methods themselves); a fourth suggested that "predominant" methods be selected and studied with reference to the reasons underlying their particular technical modifications.

Considering that any one of the existing methods which might be selected embodies features which would require convincing proof for their general acceptance, the comparison of different methods, *in toto*, does not appear a promising line of attack. Granting that such a comparison might indicate one technique as

giving the results most in conformity with the clinical findings, it would be impossible, without analysis, to know upon which factors its superiority depended, or to say that it might not be materially improved by incorporating certain features of other methods. More clear-cut conclusions will be reached, it is thought, if the essential points of difference are studied individually, or at least with other variables reduced to a minimum.

PROPOSED COÖPERATIVE STUDIES

It is proposed to group the problems to be investigated in five general divisions, and to appoint sub-referees to undertake the study of special subjects, the investigations necessary being conducted in two or more laboratories for purposes of comparison.

The divisions of the subject suggested are as follows:

1. The study of representative types of antigens used in this country and abroad.

2. The determination of the optimum method of fixation for use with representative types of antigen. (This problem to be started after the selection by the above study of a few antigens which have given the best results.)

3. The selection of the range of serum and spinal fluid quantities necessary for a merely qualitative and also for a quantitative result, and the limits on the proportions of antigen and complement for use with such amounts of serum and spinal fluid.

4. The effect of certain physical and chemical factors upon the constituents of the test, including the inactivation of serum, the preservation of complement and other reagents, the effect of different solutions as diluents.

5. The formulation of standard definitions of serological terms both in relation to hemolysis and complement fixation.

SUMMARY

A tentative plan for the standardization of the complement fixation test for syphilis was submitted to representative laboratories in the United States for criticism and suggestions. An agreement on essential features of technique, rather than the adoption of a uniform method, which was the main feature of this plan, was favored by a two-thirds majority of the laboratories from which comments were received. The differences of opinion in regard to certain fundamental technical questions proved so decided, however, that further data are needed in regard to these points before an effective standardization can be secured. A plan for the study of existing evidence and the collection of additional data by coöperative investigation has been proposed.

DEFINITIONS FOR SEWERAGE AND SEWAGE DISPOSAL PRACTICE*

IT WAS DECIDED, for the activities of the Committee this year, to define the terms used in sewerage and sewage disposal practice.

A similar committee report in 1917 presented a valuable compilation of definitions in schematic form. These definitions have been highly commended and very useful. Therein it was recommended "that in reports, contracts and agreements prepared by engineers and health officers the terms defined in this report be used and be given the meanings designated herein."

The present committee has taken a somewhat different position, in that various definitions and local usages are mentioned and no attempt is made to control or direct future use of terms except as the distinctions given may, by comparison, appeal to the individual.

A scheme, somewhat similar to that of the former report, is herewith presented in outline only, while the definitions are given in dictionary form for ready reference.

Generous quotations from the former report above mentioned, and from the tentative definitions prepared by Professor Geo. C. Whipple, Chairman of the Committee on Definitions of the Sanitary Engineering Division of the American Society of Civil Engineers, have been made, and valuable ideas received by correspondence from interested members of the Association have been incorporated in the definitions.

Respectfully submitted,

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* Report of the Committee on Sewerage and Sewage Disposal of the Sanitary Engineering Section, American Public Health Association, presented at a Joint Session with the Sanitary Engineering Division, American Society of Civil Engineers, at the Fifty-third Annual Meeting of the A.P.H.A. at Detroit, Michigan, October 22, 1924.

DEFINITIONS

A

A.B.C. PROCESS. (Alum, Blood, Clay.) A method of deodorizing and precipitating sludge by the addition of alum, charcoal or some other material, and clay, to the raw sewage. One of the earliest satisfactory methods of clarification, by chemical precipitation.

ACTIVATED SEWAGE. Sewage oxidized by the activated sludge process.

ACTIVATED SLUDGE. (1) Sludge settled out of sewage previously agitated in the presence of abundant atmospheric oxygen. (2) Sludge produced by the "Activated Sludge Process" of sewage disposal.

ACTIVATED-SLUDGE METHOD. "Activated Sludge Process."

ACTIVATED-SLUDGE PROCESS. Sewage treatment in which sewage standing in or flowing through a tank is brought into intimate contact with air and with biologically active sludge, previously produced by the same process. The effluent is subsequently clarified by sedimentation.

AERATION. The process or method of bringing about intimate contact between air and a liquid by allowing finely divided air to pass through the liquid or the finely divided liquid to pass through air.

AIR LIFT. A means of raising sewage or other liquid by injecting air in and near the bottom of an open discharge pipe submerged in a well of the liquid to be raised.

ALIGNMENT. The direction of the axis of a sewer in plan.

ALTERNATING DEVICE. Any arrangement whereby sewage may be automatically diverted from one dosing device to another in a cycle following a predetermined sequence.

ANTI-RATTLER MANHOLE COVER. One filled with asphalt for use in an asphalt paved street. It is deep and usually quiet under traffic.

APPURTENANCES. "Sewer Appurtenances."

ARCH. The curved or arched top of a masonry sewer.

B

BACK-WATER TRAP. A check valve.

BAFFLES. Partitions usually vertical extending part way or all the way across a tank or basin to direct or diffuse the flow. In a rapid stream they are employed to assist in agitating or mixing.

BAND SCREEN. One consisting of an endless band or belt of wire mesh or other screening material which passes around upper and lower rollers.

BAR SCREEN. One composed of parallel bars or rods.
BASIN. A shallow tank through which sewage passes or is detained for treatment.
BELL MOUTH. "Flaring Mouthpiece."
BIO-AERATION. A modification of the activated-sludge process in which the sewage and sludge are agitated and aerated by mechanical means such as paddle wheels or turbines.
BIO-CHEMICAL ACTION. Chemical action resulting from the growth of living matter.
BIOLYTIC TANK. A continuous flow tank with hopper bottom, with inlet arranged so as to agitate the sludge at each entry of sewage at the apex of the hopper shaped bottom. This first agitation tank is followed by a settling tank in which the sludge is detained until removed.
BLEACH. Calcium hypochloride. (Bleaching Powder.)
BLOW OFF. A waste gate or device for discharging accumulated solids or for emptying a depressed sewer.
BRANCHES. Special forms of vitrified tile and cast iron pipe for making connections to the street sewer. They are called Tee, Tee-Y, Double-Y and V from their shapes.
BRANCH SEWER. One which receives one or more lateral sewers or tributaries and which discharges into a main or trunk sewer.

C

CAGE SCREEN. One consisting of a cage usually with bottom and three vertical sides, the latter formed of bars or rods, so arranged that it may be lowered into the flowing sewage and raised for emptying.
CAPILLARY WATER. Water in the interstices of the soil or a sand filter which is not lost by draining.
CATCH BASIN. A chamber or well beneath a "receiving basin" or inlet, designed to prevent the admission of grit and detritus into the sewer.
CATCHMENT AREA. Area of watershed tributary to a lake, stream or sewer.
CATCH PIT. "Grit Catcher."
CESSPOOL. A pit into which household sewage or other liquid waste is discharged and out of which the liquid leaches into the surrounding soil or is otherwise removed.
CHAMBER. A general term for a space enclosed by walls. Often prefixed by a descriptive word as "Grit Chamber" or "Screen Chamber," indicating its contents, or "Discharge Chamber" or "Flushing Chamber," indicating its office.
CHEMICAL PRECIPITATION. (1) Sedimentation accelerated by the use of a coagulating chemical. (2) Clarification and sedimentation improved by addition of lime and iron, alum, acids or other chemicals which react with the soluble compounds in sewage.
CHLORINATED SEWAGE. Sewage treated with chlorine or bleaching powder for the purpose of disinfection.
CIRCUMFERENTIAL FLOW. Flow parallel to the periphery of a circular tank.
CLARIFICATION. The partial or complete removal of suspended and colloidal matter from a turbid liquid.
CLARIFIED SEWAGE. (1) The product of a sewage disposal plant from which the effluent appears clear. (2) Sewage from which suspended matter has been partially or completely removed.
COAGULATION. The flocculation of colloidal or suspended matter brought about by the addition of some chemical to the liquid, by contact or otherwise.
COARSE GRAINED FILTER. General term for contact bed or sprinkling filter.
COARSE RACKS. A relative term, but generally used when the clear space between bars is two inches or more.
COARSE SCREEN. A relative term, but generally used when openings are greater than one inch in least dimension, except in the case of racks. (See "Coarse Racks.")
COEFFICIENT OF IMPERVIOUSNESS. The ratio, expressed decimally, of effectively impervious surface to the total catchment area.
COLLECTING SYSTEM. All sewers from the house to the outfall.
COLLOIDAL MATTER. "Colloids" containing, largely, colloids or colloidal in characteristics and action.
COLLOIDS. (1) Substances which are soluble as judged by ordinary physical tests, but will not pass through a parchment membrane. (2) Matter in a finely divided state, apparently soluble, but which will not pass through a parchment membrane and which may be coagulated or flocculated to form insoluble particles. (3) Matter so finely divided and dispersed in a liquid that it is apparently in solution.
COMBINED SEWER. (1) One designed to receive both storm water and domestic or industrial sewage. (2) One which carries both sanitary sewage and storm water.
COMBINED SYSTEM. A system of combined sewers, or one in which sanitary sewage and storm water are carried in the same sewers.
COMMERCIALLY DRY SLUDGE. Sludge containing not more than 10 per cent water.
COMMON SEWER. One in which all abutters have equal rights.
CONCENTRATED SEWAGE. A relative term. (1) Sewage containing a relatively small proportion of water and much organic waste. (2) A sewage containing a relatively large amount of organic matter.
CONDITIONING. "Sludge Conditioning."
CONTACT BED. An artificial bed of coarse material such as broken stone or clinkers in a water tight basin provided with controlled inlet and outlet. It is operated in cycles of filling with sewage, standing full in contact, emptying and resting empty, in order to remove some of the suspended matter and oxidize organic matter by bio-chemical agencies.
CONTAMINATED WATER. Water unfit for domestic use due to the presence of sewage.
CONTAMINATION. The introduction into otherwise potable water of bacteria or sewage which makes it unfit for use.
COVER. See "Manhole Head."
CROWN. The inside top of a sewer.
CRUDE SEWAGE. Sewage which has received no treatment.
CURB. See "Manhole Head."

D

DE-GREASING. The removal of fats and greases from sewage, waste or sludge.
DEGREE OF PURIFICATION. A measure of the removal and oxidation of the objectionable and putrescible contents of sewage.
DEPRESSED SEWER. A sewer often crossing beneath a valley or a water course which runs full or under greater than atmospheric pressure because its profile is depressed below the hydraulic grade line.
DETRITUS CHAMBER. "Grit Chamber." (Term often used in England.)
DIGESTION. The biochemical decomposition of complex organic matter resulting in liquefaction in the liberation of gases, and the formation of mineral and simpler organic compounds.
DILUTE SEWAGE. A relative term. Sewage containing a large proportion of water.
DILUTION. (1) A method of disposal of sewage or effluent by discharge into a stream or other body of water. (2) The ratio of the quantity of flow of a stream to the quantity of sewage or effluent discharged into it.
DIRECT OXIDATION PROCESS. A method of treatment in which sewage previously dosed with lime is passed through closed tanks between plate electrodes through which electric current is passing while the liquid is agitated by rotating paddles, the theory being that nascent oxygen produced by electrolysis of the liquid will immediately oxidize the organic matter and attack the bacteria.
DISC SCREEN. One in the form of a circular disc rotating about an axis perpendicular to its center.
DISCHARGE SEWER. "Outlet Pipe."
DISINFECTED SEWAGE. A sewage plant effluent which has been treated with a disinfecting agent commonly chlorine or "bleach" resulting in the partial destruction of bacteria sufficient to materially reduce the danger of infection.
DISINFECTION. The partial destruction, ordinarily by the use of some chemical, of micro-organisms and spores likely to cause infection and disease.
DISPERSION. A method of disposal of the suspended solids in sewage or effluent by scattering them widely in a stream or other body of water.

DISTRIBUTOR. A distributor is a device used to apply sewage to the surface of a filter. They are of two general types fixed and movable. The fixed may be perforated pipes or notched troughs, sloping boards or sprinkler nozzles. The movable may be rotary or reciprocating perforated pipes or troughs applying spray or a thin sheet of sewage.
DIVERSION CHAMBER. A chamber which contains a regulating device.
DIVERSION MANHOLE. "Diversion Chamber."
DOMESTIC SEWAGE. Sewage from dwellings, business buildings, factories or institutions. It may also contain a small proportion of industrial waste. During dry weather the source of its liquid is the water supply; in wet weather it may or may not receive ground, surface or storm water, depending on whether the system is "separate" or "combined."
DORTMUND TANK. A deep, vertical-flow sedimentation tank with cone or hopper bottom. The sewage, introduced near the bottom, rises and overflows at the surface and the sludge may be removed from the bottom without dewatering and before it becomes septic.
DOSING CHAMBER. "Dosing Tank."
DOSING SIPHON. An automatic siphon for discharging a dosing tank.
DOSING TANK. A tank into which sewage is introduced and held until the desired quantity has been accumulated and then discharged at such rate as is necessary for the distribution essential to the subsequent treatment.
DRAIN. A conduit or pipe, usually underground, for carrying off, by gravity, liquids other than sewage and industrial wastes, and including ground or subsoil water, surface water and storm water.
DRAINAGE. A general term for gravity flow of liquids in conduits partially filled. Commonly applied to surface and ground water.
DRAINAGE SYSTEM. A connected system of drains for serving a given territory.
DRAINAGE WATER. Water flowing in a drain derived from ground, surface or storm water.
DROP MANHOLE. A shaft in which the sewage falls from a sewer to a lower level.
DRUM SCREEN. One in the form of a cylinder or cone rotating on its axis.

E

EFFLUENT. Sewage, partially or completely treated, flowing out of any sewage treatment device.
EFFLUENT DISCHARGE CONDUIT. "Outlet Pipe."
EJECTOR. See "Pneumotic Ejector."
END MANHOLE. One at the upstream end of a sewer.
ENTRANCE WELL. "Inlet Well."
EVAPORATION. Vaporization of moisture from a wet surface.

F

FILTERED SEWAGE. (1) Sewage which has passed through fine porous material, as a sand bed, at a rate slow enough to remove suspended solids and produce clarification. (2) Sewage which has passed through a coarse grained filter.
FILTERING MEDIUM. The material through which the sewage applied to a filter bed must pass and in which is contained the means of effecting treatment.
FILTRATION. (1) The removal of solids and liquid organic matter by straining, contact and oxidation. (2) The process of removing suspended or colloided matter from a liquid by causing it to flow through a relatively fine porous medium. (The liquid usually fills the pores of the medium.) (3) By passage through a coarse grained filter with or without completely filling the voids.
FILTROS. An artificial porous stone made of carefully graded silicious sand by moulding, pressing, firing, annealing and grinding. It is used as a filtering element and for diffusing air in the activated sludge process.
FINAL SETTLING BASIN. A shallow continuous flow tank into which the effluent of a sprinkling filter passes for the purpose of removing the settleable solids before its final discharge.
FINAL SETTLING TANK. Same as final settling basin but deeper and of less area.
FINE RACKS. A relative term, but generally used when the clear space between bars is one inch or less.
FINE SCREEN. A relative term, but generally used for a mechanically operated screen with openings one-quarter inch or less in least dimension.
FLARING MOUTHPIECE. A funnel shaped entrance to facilitate flow into a pipe or conduit.
FLOWING-TROUGH CHAMBER. The upper story of an Imhoff tank.
FLUSHING CHAMBER. See "Flush Tank" and "Flushing Manhole."
FLUSHING MANHOLE. A manhole provided with a gate so that sewage or water may be accumulated and then discharged rapidly for flushing the sewer.
FLUSH TANK. A chamber in which water or sewage is accumulated and discharged at intervals for flushing the sewer. Various automatic mechanical, hydraulic and pneumatic devices are provided for the purpose.
FRESH SEWAGE. Sewage recently produced, generally less than four hours old.

G

GAS SLOT. "Gas Vent."
GAS VENT. An opening which allows gas, liberated in an Imhoff sludge digestion chamber, to reach the atmosphere without passing up through the sewage in the settling chamber.
GRADE. The elevation of the invert of a sewer above datum.
GRADIENT. "Slope."
GRATING. A screen consisting of two sets of parallel bars transverse to each other in the same plane.
GRAVITY SYSTEM. One in which all sewage runs on descending gradients from source to outlet, or where no pumping is required.
GREASE TRAP. A device connected with a house sewer by means of which the grease content of the sewage is cooled and congealed so that it may be later skimmed from the surface.
GRIT. The heavy mineral matter deposited from sewage in grit chambers.
GRIT CATCHER. A chamber usually placed at the upper end of an inverted siphon or at other points of protection on combined or storm-water sewers, of such shape and dimensions as to reduce the velocity of flow and thus permit the settling out of relatively heavy suspended matter.
GRIT CHAMBER. An enlarged channel or long basin near the beginning of a treatment plant in which the cross section is designed to reduce the velocity of the flowing sewage and only enough to cause the deposition of heavy solids such as grit, sand and gravel.
GROUND WATER. Water derived from beneath the surface of the ground.
GROUND-WATER DRAIN. One which carries away ground water.

H

HORIZONTAL FLOW TANK. A sedimentation tank or basin, with or without baffles, in which the direction of flow is generally horizontal and lengthwise the tank.
HOUSE CONNECTION. "House Sewer."
HOUSE LATERAL. (*Rochester, N. Y.*) The portion of the house connection from the street sewer to the street line laid by the municipality.
HOUSE SEWAGE. (1) Sewage from dwellings. (2) Loosely used for "Domestic Sewage."
HOUSE SEWER. (1) One which carries house sewage to the street or common sewer. (2) (*Wisconsin*) Sewer between house and curb, built by the owner. (3) (*Rochester, N. Y.*) Sewer between house and street line, built by the owner.
HUMUS SLUDGE. (1) Digested sludge deposited in final or secondary settling tanks, following sprinkling filters. (2) Sludge resembling humus in appearance.
HUMUS TANK. (1) A tank for collecting humus sludge. (2) "Final Settling Basin."
HYDRAULIC GRADE. The inclination of the profile of the liquid surface in a sewer. Generally taken parallel to the invert.
HYDRAULIC INCLINATION. "Hydraulic Grade."
HYDRAULIC SLOPE. "Hydraulic Grade."

HYDROLYSIS. A change in the molecular composition of matter by the addition of water.

HYDROLYTIC TANK. General term for any sedimentation tank in which, by biochemical processes, a portion of the suspended organic matter is liquefied and gassified.

I

IMHOFF TANK. A deep two-storied tank invented by Dr. Karl Imhoff, consisting of an upper or continuous sedimentation chamber and a lower or sludge digestion chamber. The floor of the upper chamber slopes steeply to trapped slots through which solids may settle into the lower chamber. The lower chamber receives no fresh sewage but is provided with gas vents and with means for drawing digested sludge from near the bottom.

INCREASER. A tapered section of pipe or conduit used when passing from a smaller to a larger section.

INDUSTRIAL SEWAGE. (1) Sewage in which industrial wastes predominate. (See "Domestic Sewage" and "Industrial Wastes.") (2) A combination of the liquid wastes of the industry and the operatives.

INDUSTRIAL SEWER. (*California*) One which carries industrial waste and no sanitary sewage or storm water.

INDUSTRIAL WASTES. Liquid wastes from industrial processes.

INFECTED WATER. Water which contains disease germs.

INFECTION OF WATER. The introduction of pathogenic bacteria into water in sufficient quantities to produce disease.

INFILTRATION. Water which leaches through the ground and enters a sewer through joints.

INFLUENT. Sewage, raw or partially treated, flowing into any sewage treatment device.

INLET. A connection between the surface of the ground and a combined or storm-water sewer for the admission of surface or storm-water. It includes the inlet well and surface sewer connection.

INLET WELL. A well or opening at the surface of the ground to receive surface water which is thence conducted to the sewer.

INSTITUTIONAL SEWAGE. Domestic sewage from institutions such as hospitals, sanitariums, penal and charitable establishments.

INTERCEPTING SEWER. (1) One which receives the dry-weather flow from a number of transverse sewers or outlets with or without a determined amount of storm water from a combined system. (2) (*Ohio and Michigan*) Refers only to a combined system.

INTERMITTENT SAND FILTER. A natural or artificial bed of sand or other fine-grained material to which sewage is applied in intermittent doses and through which it flows. During alternate intervals the interstices are partly filled with air. The result is a clarified and oxidized effluent due to the straining out of solids, the absorption of colloids and the oxidation of organic matter by biochemical agencies.

INVERT. Originally: the inverted arch of a masonry lined sewer. By derivation: the floor, bottom or lowest point in the cross section of a sewer.

INVERT BLOCK. A sub-drain of voussoir-shaped hollow tile built into the invert of a masonry sewer.

INVERTED SIPHON SEWER. "Depressed Sewer."

IRRIGATION. The process of sewage treatment in which the sewage is applied to land growing crops.

J

JUNCTION MANHOLE. One at the junction of two or more sewers.

K

KITCHEN WASTE. Culinary wastes from a kitchen.

L

LAMP HOLE. A small vertical pipe or shaft leading from the surface of the ground to the sewer, for admitting a lantern or reflected light for purposes of inspection.

LAND DRAIN. (1) A conduit for draining land. (2) "Ground-Water Drain."

LATERAL. (*Rochester, N. Y.*) A house or surface sewer connection.

LATERAL SEWER. One which discharges into a branch or other sewer and has no other common sewer tributary to it. Its contents are received from individual buildings or surface sewer connections.

LEACHING CESSPOOL. One out of which the liquid leaches into the surrounding soil.

LEAKAGE. Water which is lost from a sewer through joints.

LINE MANHOLE. One in the line of the sewer at a point where no other sewers connect. It may be at a point where the sewer changes direction, either in line, slope or grade.

LIQUID SLUDGE. Sludge which flows by gravity, generally 75 to 99 per cent water.

M

MAC LACHLAN PROCESS. A method of conditioning liquid sludge preparatory to dewatering by the application of sulfur dioxide gas produced in rotary sulfur burners from crude sulfur.

MAIN SEWER. (1) One which receives one or more branch sewers as tributaries. (2) (*Rochester, N. Y.*) Street, common or public sewer as distinguished from surface sewer, house connection or lateral. (3) "Trunk Sewer."

MANHOLE. A shaft or chamber from the surface of the ground large enough to admit a man for inspection or cleaning of the sewer. It is preferably so placed as to give a clear line of sight through the sewer from manhole to manhole.

MANHOLE HEAD. A cast iron fixture surmounting the manhole shaft with its top flush with the pavement. It is made up of two parts, the "Curb" or "Frame" which rests on the masonry of the shaft and the removable "Cover." Curbs are either "fixed" or "adjustable" in height. Covers are "tight," "ventilated" and "Anti-Rattler."

MEDIUM SCREEN. One with openings between coarse screen and fine screen.

MESH SCREEN. One composed of twilled or woven fabric usually of wire.

MILES ACID PROCESS. A method of treatment invented by Geo. W. Miles, in which sewage is acidified by sulfuric acid, or better, by sulfurous acid fumes obtained by burning sulfur or roasting pyrite. The fumes are absorbed by a portion of the sewage. This portion is then mixed with the remainder of the sewage. Subsequent precipitation of solids results in clarification and a measure of disinfection. The bulk of the sludge produced is less than by any other means of precipitation. The method is best adapted to sewage of low alkalinity.

MOUTH PIECE. "Flaring Mouthpiece."

O

OUTFALL SEWER. One which receives the sewage from the collecting system and conducts it to a point of final discharge or to a disposal plant.

OUTLET PIPE. Pipe which conveys the effluent from a treatment plant to its final place of disposal.

OXIDATION. Sewage oxidation is the process whereby, through the agency of living organisms in the presence of air, the organic matter is converted into a more stable form or into mineral matter.

OXIDIZED SEWAGE. Sewage in which atmospheric or other oxygen has acted upon the putrescible organic matter and rendered it stable.

P

PARTIALLY TREATED SEWAGE. Sewage which has received incomplete treatment at a sewage disposal plant.

PERCOLATING FILTER. "Trickling Filter."

PERCOLATION. The flow or trickling of a liquid downward through a relatively coarse porous medium. The liquid usually does not fill the pores of the medium.

PLATE SCREEN. One composed of perforated plate.

PNEUMATIC EJECTOR. A means of raising sewage or other liquid by alternately admitting it through a check valve into the bottom of a pot and then ejecting it through another check valve into the discharge pipe by admitting compressed air to the pot above the liquid.

POLLUTED WATER. Water which has been fouled by sewage or other liquid and thus rendered offensive to sight or smell and unfit for culinary or industrial uses.

POLLUTION. The fouling of an inoffensive water by sewage or other liquid, thus rendering it offensive to sight and smell and unfit for culinary or industrial uses.

POTABLE WATER. Water used for beverage and culinary purposes.

PRECIPITATION. (1) "Chemical Precipitation." (2) Rain and snowfall expressed in inches depth.

PRIVATE SEWER. One privately owned and used by one or more properties.

PUBLIC SEWER. A common sewer controlled by public authority.

PUTREFACTION. Decomposition of organic matter under conditions of oxygen deficiency.

PUTRESCIBILITY. (1) The susceptibility of waste waters, sewage, effluent or sludge to putrefaction under the conditions to which it is subjected. (2) The relative tendency of organic matter to undergo decomposition in the absence of oxygen.

R

RACK. A screen composed of parallel bars, either vertical or inclined, from which the screenings are raked.

RADIAL FLOW. Direction of flow across a circular tank, from center to periphery or *vice versa*.

RADIAL INWARD FLOW. Inlet at periphery and outflow at the center of a circular tank.

RADIAL OUTWARD FLOW. Inlet at center and outflow at the periphery of a circular tank.

RAINFALL RATE. Precipitation in inches per hour.

RATE OF PRECIPITATION. "Rainfall Rate."

RAW SEWAGE. "Crude Sewage."

RECEIVING BASIN. (*Rochester, N. Y.*) "Inlet Well."

REDUCER. A tapered section of pipe or conduit used when passing from a larger to a smaller section.

REGULATOR. A device for controlling the quantity admitted to an intercepting sewer or unit of a disposal plant.

RELATIVE STABILITY. The ratio, expressed in per cent, of available oxygen in waste waters, sewage, effluent or diluted sewage to that required to prevent putrefaction.

RELIEF SEWER. One constructed to supplement another in the same territory. It generally has no house or surface sewer connections, but receives its sewage from the street sewers.

RESERVOIR. A tank or basin primarily for storage of a liquid.

ROOF WATER. Storm water from roofs.

RUN OFF. The portion of the precipitation which reaches a lake, stream or sewer expressed in inches depth.

RUN OFF COEFFICIENT. The ratio, expressed decimally, of run off to precipitation.

RUN OFF RATE. Run off in inches per unit of time (per year or per month).

S

SAND CATCHER. "Grit Catcher."

SAND FILTER. "Intermittent Sand Filter."

SANITARY SEWAGE. (1) Domestic sewage with storm water excluded by design. (2) Sewage originating in the sanitary conveniences of a dwelling, business building, factory or institution. (3) The water supply of a community after it has been used and discharged into a sewer.

SANITARY SEWER. One which carries sanitary sewage and excludes storm, surface and ground water.

SATURATION. The condition of a liquid when it has taken into solution the maximum possible amount of a given substance at the given temperature and pressure, as water saturated with oxygen.

SCREEN. A device with openings generally of uniform size used to retain coarse sewage solids. The screening element may consist of parallel bars, rods or wires, grating wire mesh or perforated plate, and the openings may be of any shape, circular, rectangular or long slits.

SCREENED SEWAGE. (1) Sewage which has passed through racks or screens. (2) Sewage which has passed through fine screens.

SCREENING. The removal of relatively coarse floating and suspended solids by straining through racks or screens made of bars, gratings, wires or perforated plates.

SCREENINGS. The material removed from sewage by screens and racks.

SCUM. A mass of sewage solids, buoyed up by entrained gas, grease or other substances which float at the surface of sewage.

SCUM BOARD. A vertical baffle dipping below the surface of sewage in a tank to prevent the passage of floating matter.

SCUM COMPARTMENT. In an Imhoff tank, the connecting space below the gas vent and above the sludge compartment.

SECONDARY SETTLING TANK. "Final Settling Tank."

SEDIMENTATION. The subsidence and deposition of suspended matter in a liquid by gravity.

SEDIMENTATION TANK. One in which sewage or effluent is retained long enough or in which the velocity is low enough to allow partial deposition of suspended matter but without intended anaerobic action.

SEDIMENTED SEWAGE. Sewage from which some of the solids have been removed by sedimentation. "Settled Sewage."

SEMI-CIRCUMFERENTIAL FLOW. Flows parallel to the semi-circumferences of a circular tank, divided at the entrance and meeting again at the common outlet.

SEPARATE SEWER. (1) One which excludes storm water, thus distinguished from combined sewer. (2) A sanitary sewer.

SEPARATE SLUDGE DIGESTION. A method by which digestion occurs subsequent to removal of the sludge from the tank in which it accumulated upon sedimentation.

SEPARATE SYSTEM. A system of separate sewers, or one in which sanitary sewage and storm water are carried in separate conduits.

SEPT-AER-SED METHOD. Sewage treatment in which septic tank effluent is aerated and passed into a sedimentation tank. This secondary sludge is then pumped back into the septic tank and the effluent is discharged relatively stable.

SEPTIC SEWAGE. (1) Sewage over eight or twelve hours old which is in a septic condition indicated by odor and the emission of bubbles. (2) Sewage undergoing putrefaction in the absence of oxygen.

SEPTIC TANK. An open or covered continuous horizontal flow tank in which sewage and the deposited sludge are retained long enough to allow considerable anaerobic decomposition. The period of detention of sewage is usually from eight to twelve hours.

SETTLEABLE SOLIDS. Suspended solids which will subside in quiescent sewage in a reasonable period. (Two hours is a common arbitrary standard.)

SETTLED SEWAGE. Sewage from which some of the solids have settled out in a tank during quiescence or slow flow.

SETTLING CHAMBER. (1) "Sedimentation Tank." (2) The second or final element of the so-called biolytic tank.

SETTLING SOLIDS. "Settleable Solids."

SETTLING TANK. "Sedimentation Tank."

SEWAGE. (1) Wash water and water-carried animal, culinary and in some cases industrial wastes. (2) Liquid waste containing human excreta, ordinarily flowing in or from a house drainage system or sewer. "Excreta" includes feces, urine, secretions from the skin, expectoration, etc. (3) Liquid wastes from dwellings and institutions, stables and business buildings. It may also contain liquid wastes from industries. (4) A combination of (a) the liquid wastes conducted away from residences, business buildings and institutions and (b) from industrial establishments, with (c) such ground, surface and storm water as may be admitted to or find its way into the sewers. (5) The ordinary liquid contents of a sewer containing organic wastes, which may or may not include street wash.

SEWAGE DISPOSAL. General term. The act of disposing of sewage by any method.

SEWAGE LIFT. Pumping equipment appurtenant to a collecting system where necessary to raise sewage to a higher level sewer.

SEWAGE PURIFICATION. Loosely used for "Sewage Treatment."

SEWAGE TREATMENT. Any artificial process to which sewage is subjected in order to partially remove or so alter its impurities as to render it less offensive or dangerous and more fit to discharge.

SEWAGE WORKS. Main pumping station, treatment plant and means of disposal.

SEWER. A conduit for carrying sewage.

SEWER APPURTENANCES. Constructions, devices and appliances other than the pipe or conduit which are appurtenant to a sewer, such as manholes, flush tanks, surface inlets, etc.

SEWER-SERVICE LATERAL. (*Wisconsin*) The portion of the house connection from the street sewer to the curb, laid by the municipality.

SEWER SYSTEM. The collecting system of sewers and appurtenances including sewage lifts where required.

SEWER TERRITORY. The area deemed benefited and assessed for the cost of a sewer.

SEWERAGE SYSTEM. Comprehensive term including all constructions for collection, transportation, pumping, treatment and final disposition of sewage.

SEWERAGE WORKS. "Sewage Works."

SIDEWALLS. The vertical, curved or inclined walls which support the arch or top of a masonry sewer.

SINK WASTE. Liquid waste from a sink.

SKIMMING TANK. A chamber so arranged that floating matter rises and remains on the surface of the sewage until removed while the liquid flows out continuously under partitions, curtain walls or deep scum boards.

SLANT. A branch inserted in the side of a brick, concrete or other masonry sewer for the purpose of making connection thereto.

SLEEK. The thin oily film usually present which gives characteristic appearance to the water surface at and near a sewer outlet.

SLOPE. The inclination of the profile of the invert of a sewer expressed in per cent of length, or as one foot fall in a given length in feet.

SLOT. A narrow opening. The trapped opening for the passage of settled solids from the flowing through chamber to the sludge digestion chamber of an Imhoff tank.

SLUDGE. Semi-liquid and largely organic suspended sewage solids as deposited in tanks or as subsequently treated.

SLUDGE BED. An enclosed natural or artificial area of porous material (sand) upon which sludge is partially dried by draining and evaporation.

SLUDGE CAKE. A mass resulting from sludge pressing. The cake does not contain enough water to fill its voids.

SLUDGE CHAMBER. "Sludge Digestion Chamber."

SLUDGE COMPARTMENT. "Sludge Digestion Chamber."

SLUDGE CONDITIONING. Treatment of undigested liquid sludge preliminary and in order to make it amenable to de-watering.

SLUDGE CONCENTRATION. (1) The process of reducing the volume of water content of sludge by sedimentation and decantation, or by mechanically thickening by scraping to a sump, it still remains liquid. (2) Any method of sludge treatment whereby the moisture content is reduced, while the sludge still remains liquid.

SLUDGE DE-WATERING. A general term for the removal of a portion of the water in sludge by any process such as draining, pressing, centrifuging, exhausting, wringing between rollers or acid flotation, with or without heat. It involves reducing from a liquid to a spadable condition rather than merely changing the density of the liquid (concentration) on the one hand or drying (as in a kiln) by high heat on the other.

SLUDGE DIGESTION. The biochemical process by which organic matter in sludge is gasified, liquefied, mineralized or converted into more stable organic matter.

SLUDGE DIGESTION CHAMBER. The lower story of an Imhoff tank or Travis tank.

SLUDGE DRYING. The process of (1) drying sludge by draining and evaporation on sludge beds, and (2) drying in kilns by artificial heat.

SLUDGE-DRYING BED. "Sludge Bed."

SLUDGE PASTE. Sludge with voids filled with water but which will not flow. There is a wide range of moisture (35 to 75 per cent).

SLUDGE PRESSING. The process of de-watering by pressure, the solids being retained by and the water passing out through a fabric.

SPADABLE SLUDGE. Sludge dry enough to be shoveled or forked from the drying bed (30 to 60 per cent moisture).

SPRAY NOZZLE. "Sprinkler Nozzle."

SPRAYING NOZZLE. "Sprinkler Nozzle."

SPRINKLER. "Sprinkler Nozzle."

SPRINKLER NOZZLE. A nozzle used for applying sewage to a sprinkling filter.

SPRINKLING FILTER. A trickling filter in which the sewage is applied by spray (the usual type and hence the name most used).

SQUEEGEE. A hand propelled device used for dislodging and removing deposited sewage solids from the walls and bottoms of settling tanks.

STABLE EFFLUENT. A treated sewage which contains enough oxygen to satisfy its complete oxygen demand.

STABLE SEWAGE. Wash water from stables containing considerable quantities of animal wastes. (Barn Sewage.)

STABILITY. The capability of waste water, sewage, effluent or sludge to resist putrefaction under the conditions to which it is subjected.

STALE SEWAGE. (1) Sewage which has not yet become septic as exhibited by the emission of bubbles. (2) Sewage containing little or no oxygen but as yet free from putrefaction.

STENCH TRAP. A flap valve in a frame which opens to admit cellar drainage to a sewer and then closes to prevent sewer air from entering the house.

STERILIZATION. The complete destruction of micro-organisms and their spores ordinarily through the agency of heat or of some chemical.

STERILIZED SEWAGE. A sewage effluent in which all micro-organisms and their spores have been destroyed.

STORM DRAIN. "Storm-Water Sewers."

STORM OVERFLOW. A weir, orifice or other device for discharging from a main, trunk or intercepting sewer, excess of combined sewage or storm water over that which the sewer or interceptor is designed to carry.

STORM-OVERFLOW SEWER. "Storm-Water Overflow Sewer."

STORM WATER. Excess water during rainfall or continuously following and resulting therefrom.

STORM-WATER DRAIN. "Storm-Water Sewer."

STORM-WATER OVERFLOW. "Storm Overflow."

STORM-WATER OVERFLOW SEWER. One which carries excess flow from a storm-water overflow to an independent outlet.

STORM-WATER SEWAGE. The ordinary liquid contents of a storm-water sewer, including street wash and roof water.

STORM-WATER SEWER. One which carries storm and surface water, street wash and some other wash waters or drainage but excludes domestic and sanitary sewage and industrial wastes.

STREET SEWER. "Common Sewer" or "Public Sewer" in a street.

STRONG SEWAGE. "Concentrated Sewage."

SUBSIDING BASIN. "Sedimentation Tank."

SUB-DRAIN. A conduit constructed beneath a sewer to carry ground water.

SUB-MAIN SEWER. "Branch Sewer."

SUB-SOIL DRAIN. A ground-water drain deep enough to take water from the sub-soil.

SUB-SURFACE IRRIGATION. The process of sewage treatment in which the sewage or effluent is applied to land by distributing it beneath the surface through open jointed pipes.

SURFACE INLET. "Inlet Well."

SURFACE IRRIGATION. The process of sewage treatment in which the sewage is applied to land growing crops by distributing it over the surface.

SURFACE SEWER. (*Rochester, N. Y.*) "Surface-Sewer Connection."

SURFACE-SEWER CONNECTION. The pipe which connects a surface sewer or "Inlet Well" with the street sewer.

SURFACE-SEWER LATERAL. (*Rochester, N. Y.*) "Surface-Sewer Connection."

SURFACE WATER. Water derived from the surface of the ground.

SURFACE-WATER DRAIN. One which carries surface water.

SUSPENDED SOLIDS. Solids physically suspended in sewage or effluent, determinable in amount by standard laboratory methods of filtration.
SYSTEM OF SEWERAGE. "Sewerage System."
SYSTEM OF SEWERS. "Sewer System."

T

TANK. Any chamber, vat or basin through which sewage passes or in which it is detained during its collection or treatment.
TANKAGE. Detention in a tank during treatment.
TANK TREATMENT. Treatment of sewage, effluent or sludge in a tank either in a state of quiescence or slow flow. The treatment may consist of coagulation, agitation aeration, sedimentation, precipitation or digestion.
TIGHT CESSPOOL. "Water-Tight Cesspool."
TIGHT MANHOLE COVER. One without openings.
TRADE WASTES. "Industrial Wastes."
TRANSPORTATION. Vaporization of water taken up by vegetation.
TRAP. A device to prevent foul air in a sewer from backing up and following a connection. When made of cast iron or vitrified tile, it may be of various forms defined as running trap, P-trap, S-trap, etc. They are generally used in connection with combined systems.
TRASH. The material removed from combined and storm water sewers by coarse racks.
TRAVIS TANK. A two story hydrolytic tank invented by Dr. Travis consisting of an upper sedimentation chamber with steeply sloping bottom terminating in slots through which the deposited solids pass into the lower or sludge digesting chamber through which latter a predetermined portion of the sewage is allowed to pass for the purpose of seeding and maintaining bacterial life in the sludge and carrying away decomposition products. This is for the purpose of inducing digestion of the sludge attended by its reduction in volume.
TREATED SEWAGE. Sewage which has received treatment more or less complete at a sewage disposal plant.
TRICKLING FILTER. An artificial bed of coarse material such as broken stone, clinkers, slate, slats or brush over which sewage is distributed and applied in drops, films or spray from troughs or drippers, moving distributors or fixed nozzles and through which it trickles to the underdrains giving opportunity for organic matter to be oxidized by bio-chemical agencies.
TRUNK SEWER. (1) "Main Sewer." (2) One which receives many tributary branches and serves as an outlet for a large territory. (3) "Intercepting Sewer."
TWIN OR MULTIPLE DOSING TANKS. Twin or multiple tanks of equal capacity, each equipped with a dosing device, so interconnected that they fill and discharge alternately or in rotation.

U

UNDER DRAIN. (1) A land drain laid below ground. (2) "Sub-Drain."

V

VENTILATED MANHOLE COVER. One with openings.
VERTICAL-FLOW TANK. A sedimentation tank in which the sewage enters near the bottom, rises vertically and flows out at the top.

W

WATER-TIGHT CESSPOOL. One with tight walls to prevent leaching and from which the contents are removed at intervals.
WEAK SEWAGE. "Dilute Sewage."
WING SCREEN. One in which the screening elements are radial planes or curved vanes rotating on a horizontal axis.

SCHEMATIC OUTLINE

I. LIQUID AND WATER-CARRIED WASTES FLOWING IN SEWERS AND DRAINS

A. DRAINAGE WATER
1. Defined as to source
a. Rain water
b. Ground—Sub-surface
c. Surface
d. Storm
e. Roof
f. Drainage
2. Defined as to condition
a. Fresh
b. Salt
c. Saturated with oxygen
d. Deficient in oxygen
e. Clear
f. Turbid
g. Colorless
h. Stained
i. Potable
j. Contaminated
k. Polluted
l. Infected

B. SEWAGE
1. Defined as to source
a. Domestic
b. Industrial
c. House
d. Stable
e. Institutional
f. Sanitary
g. Storm water
h. Separate
i. Combined
2. Defined as to condition
a. Fresh
b. Stale
c. Septic
d. Dilute—weak
e. Concentrated—strong
f. Crude—raw
g. Partially treated
h. Treated
i. Screened
j. Sedimented—settled
k. Precipitated
l. Oxodized
m. Activated
n. Filtered
o. Clarified
p. Chlorinated
q. Disinfected
r. Sterilized

II. THE COLLECTING SYSTEM

A. DRAINS
1. Ground
2. Surface
3. Storm water
4. Land
5. Under drain
6. Sub-drains

B. SEWERS
1. Common
2. Public
3. Private
4. Street
5. Lateral
6. Branch or sub-main
7. Main
8. Trunk
9. Interceptor
10. Outfall
11. Outlet pipe
12. Relief

13. Overflow
14. Storm water
15. Sanitary
16. Combined
17. Separate
18. Industrial

C. CONNECTIONS
1. Lateral
2. House
3. Surface sewer
4. Traps
5. Branches

D. APPURTENANCES
1. Manhole
2. Lamphole
3. Flush tank
4. Flushing chamber
5. Catch basin
6. Surface inlet well
7. Diversion chamber
8. Regulator
9. Grit catcher
10. Storm overflow weir
11. Depressed Sewer—inverted siphon
12. Blow off
13. Sidewall
14. Arch
15. Invert
16. Crown
17. Drop manhole
18. Sewage lift
19. Air lift
20. Pneumatic ejector

III. DISPOSAL

A. WITHOUT TREATMENT
1. Irrigation
2. Dilution

B. WITH TREATMENT
1. Separation of solids and liquids
   a. Coarse solids by racks
   b. Floating and coarse suspended solids by screens, scum boards or skimming chambers
   c. Grit, by grit chamber
   d. Settleable solids, by tanks
   e. Suspended solids, by
      (1) Sedimentation
      (2) Chemical precipitation
      (3) Flotation
      (4) Centrifuging
      (5) Sand filtration
   f. Colloids by precipitation or filtration
2. Treatment of liquid
   a. Oxidation
      (1) Dilution
      (2) Irrigation
      (3) Sand filtration
      (4) Contact bed
      (5) Sprinkling filter
      (6) Activation
      (7) Direct oxidation with lime
      (8) Miles acid process
   b. Disinfection
      (1) Liquid chlorine
      (2) Bleach
   c. Sterilization
      (1) Heat
      (2) Chemicals
3. Disposal of effluent
   a. Irrigation
   b. Dilution
4. Treatment of solids
   a. Screenings and scum
      (1) Burying
      (2) Burning
      (3) Composting
   b. Grit—used as filling
   c. Sludge
      (1) Removed undigested as liquid
         (a) Covered in furrows
         (b) Lagooned
         (c) Dumped at sea
      (2) Digested
         (a) In full stream of sewage, septic tank, biolytic tank
         (b) In small amount of sewage, Travis tank
         (c) Without sewage, Imhoff tank, separate digestion
      (3) Removed, digested as liquid
         (a) Covered in furrows
         (b) Sprayed as fertilizer
         (c) Lagooned
         (d) Dumped at sea
      (4) Concentrated (either digested or undigested)
         (a) Sedimentation and decantation
         (b) Mechanical thickeners
      (5) Removed, concentrated as a liquid, then
         (a) If undigested, treated as (1) or digested separately as in (2)-(c) above
         (b) If digested, treated as in (3) above or dewatered as in (6) below
      (6) De-watered to spadable condition
         (a) Sand beds, draining and evaporation
         (b) Pressing
         (c) Centrifuging
         (d) Exhausting, Oliver filter
         (e) Wringing, between rollers
      (7) Removed as cake or in spadable condition
         (a) Dumped at sea
         (b) Used as filling
         (c) Used as fertilizer
         (d) Mixed with fuel and burned
      (8) Dried in a kiln by heat
         (a) Used as fertilizer
         (b) Used as fertilizer base

PUBLIC HEALTH NOMENCLATURE*

NEW UNDERTAKINGS develop new vocabularies. New words are created and old words are given special meanings. This has happened in the field of public health. An undertaking engaged in by many persons is promoted by all speaking the same language, that is, if the words in common use are symbols for the same ideas to each individual.

To accomplish this the individuals concerned must agree among themselves as to the idea which shall be conveyed by the various symbols and when this has been done the agreement is recorded in the dictionary. New fields of thought call for new agreements as to symbols, and it is appropriate for sanitarians to establish the standards of speech which shall be used at least between themselves.

The Committee on Public Health Nomenclature of the Association has been engaged in determining as far as possible what agreement has been reached as to the meaning of various terms commonly used in public health work. It sets forth these definitions in its report presented herewith and the committee will welcome suggestions for the improvement of these definitions.

DEFINITIONS

Communicable Diseases: Those diseases the causative agents of which may pass or be carried from one person to another directly or indirectly.

Demography: The statistical study of human life.

Epidemiology: That science which deals with the spread of diseases which are communicable or which are influenced by causes affecting a number of people.

Fomites: Any nonliving matter, other than food, that may harbor living disease micro-organisms capable of causing infection for a period of several days.

Health: 1. (In an absolute sense) That quality of life in which the body is sound, the various organs function naturally and the whole organism responds adequately to its environment. 2. (In a relative sense) Quality of life as affected by the condition of the body, the functioning of the various organs and the response of the whole organism to environmental influences.

Hygiene: 1. (General sense) The science and art of the protection and promotion of health. 2. (Technical sense) The art of controlling the human body and its immediate surroundings in order to preserve bodily soundness, natural functions, and adequate adjustment to the environment.

Hygiology: The complete science upon which the arts of hygiene and sanitation are based.

Immunity: The existence (possession) of resistance against specific infectious diseases above the ordinary or average.

Inoculation: The act of introducing any foreign agent into the living animal body, parenterally, by any means, usually by injection.

Isolation: Restrictions placed upon the sick person and his immediate attendants and surroundings.

Preventive Medicine: The art of preventing disease by the use of biological products, drugs, and other means.

Public Health: 1. (Popular sense) The general, or collective, health of the people. 2. (Administrative or legal sense) The health of the community as influenced by factors which affect a considerable number of people in some connected way. 3. (Technical sense) Measures applied to a considerable number

* Report of the Committee, presented to the Public Health Administration Section of the American Public Health Association at he Fifty-third Annual Meeting at Detroit, Michigan, October 21, 1924.

of people in some connected way to prevent the impairment of health or to promote health and bodily comfort.

Quarantine: 1. The detention of ships, persons or (and) cargoes from ports infected with certain specified diseases. 2. Restrictions placed upon the premises and persons occupying premises where certain communicable disease exists.

Sanitation: The art of securing and maintaining a clean (suitable) environment for the protection and promotion of health and comfort.

Serum: 1. The liquid portion of animal blood which separates from the clot. 2. The liquid portion of blood, whole or modified, coming from animals that have been inoculated with disease micro-organisms or their products and therefore contain antibodies capable of establishing increased passive resistance when introduced parenterally into the body of another animal.

Vaccinate: The act of introducing the living agent of cowpox into the human body.

Vaccine: 1. (Specific and original sense) The living agent of cowpox in any form used by introduction into the body to establish immunity to smallpox. 2. (General sense) Any biological agent (organic material) which upon introduction into the animal body results in the production of antibodies and consequent heightened resistance to disease.

Vector: Animals, most commonly insects, which carry and transmit disease organisms. *Biological Vector:* Where the disease organisms pass an essential phase of their life cycle in the animal (insect). *Mechanical (Passive) Vector:* Where the animal (insect) serves as the accidental or passive conveyor of the disease.

M. P. RAVENEL, M.D., *Chairman*
GEORGE C. WHIPPLE
E. O. JORDAN
C. M. HILLIARD

FORMS AND METHODS OF STATISTICAL PRACTICE

AT THE meeting of the Vital Statistics Section at the Boston Meeting of the Association, the Committee on Forms and Methods of Statistical Practice proposed the adoption of a few uniform tables for reports of vital statistics. These tables did not cover all phases of vital statistics but they were intended simply as a start along the road of standardization of tables. Moreover it should be clearly understood that the idea of standard tables is not to urge standardization of all tables, but to urge the adoption of certain minimum standard tables which will contain at least the items indicated, but which may contain additional items if health officers desire. In other words, there is no intention of binding the health officer so hard and fast to the standardization idea that his creative genius will be killed or even retarded. The committee proposed to send a letter to all state registrars and the registrars of all cities of 100,000 population or over. The registrars were asked if they would agree to publish their vital statistics in accordance with the suggested forms provided 90 per cent of those approached would do likewise. The last report of the committee follows.*

Since the Boston meeting the proposed letter and the three tables** have been submitted to the various boards of health. Of the 48 states, 29, or 60 per cent, and of the 72 cities, 48, or 67 per cent, have agreed to present statistics in accordance with the tables outlined if 90 per cent agree. Sixteen per cent of the states and 10 per cent of the cities do not see their way clear to conform, while the remaining 24 per cent of the states and 23 per cent of the cities constitute a field for further missionary work. Although these replies do not indicate that 90 per cent are yet ready to adopt the three tables without change, your com-

* Presented to the Vital Statistics Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1924.

** Copies of the proposed standard tables can be secured from the A.P.H.A., 370 Seventh Avenue, New York City.

mittee believes real progress has been made toward setting the uniformity idea in motion.

As the next step, your committee recommends that a copy of the accompanying tabulation of replies be sent to each of the health departments concerned and the following statement be made:

In view of the fact that more than 64 per cent of the health departments approached look with favor on the proposed tables, the Vital Statistics Section of the American Public Health Association urges the various health departments to present statistics in their annual reports in accordance with the proposed tables and so make a practical beginning toward standard vital statistics tables.

Your committee also recommends that the committee be made a standing committee to give publicity to the idea, to gather suggestions regarding a revision of these tables in 1929, and to make progress reports to the Section from time to time as occasion demands.

WILLIAM H. DAVIS, M.D., *Chairman*
S. G. THOMPSON, D.P.H.
STUART T. FRIANT
WILMER R. BATT, M.D.

SUMMARY OF REPLIES TO SUGGESTION THAT STATES AND CITIES OF 100,000 POPULATION PUBLISH THREE SPECIFIED VITAL STATISTICS TABLES IN THEIR ANNUAL REPORTS

States	Replies	Per cent	Cities		
29	Yes	60	48	Yes	67
8	No	16	7	No	10
3	Doubtful	24	5	Doubtful	23
4	No reply		9	No reply	
1	Partly		1	Probably	
3	Conditional		2	Conditional	
Total 48 states			Total 72 cities.		

CANCER EDUCATION PAYS

THE latest report of the Pennsylvania State Cancer Commission shows that the work for the control of cancer is producing good results in bringing about early and competent treatment for cancer cases.

The Commissioner's findings are based upon a study made in 1910 of the records of cancer cases throughout the State of Pennsylvania, and repeated in 1923 under circumstances which make the data comparable. When a comparison is made, the results reflect the improvement in the knowledge of the public and the medical profession resulting from the educational work of the last thirteen years.

People are applying for medical aid more promptly than they used to do, and for the most part the physicians are giving proper treatment with less delay. The time interval between the discovery of the disease and the application of treatment has been reduced twenty per cent in superficial cancer and nearly fifty per cent in cases of deep-seated cancer. Furthermore, the physicians of Pennsylvania have learned the importance of prompt action sufficiently to have reduced the interval between the patient's first appearance and the beginning of the treatment 65 per cent in superficial and about 70 per cent in deep-seated cancer.

The Commission recommends the establishment of a cancer division in the state clinics. This would give the poor people a chance for thorough examination early.—Report of the Pennsylvania Commission on Cancer to the House of Delegates. *Atlantic Medical Journal*, Sept., 1924.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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THE TRUTH ABOUT CANCER

IT IS HARD to believe that of all the men and women now living in the United States, one in ten is destined to die of cancer, yet the statistics which are issued by the United States Census Bureau indicate that the proportion is at least that.

The proportion cannot be smaller and it may be larger. It cannot be smaller for the reason that few if any deaths which are due to other causes are ever charged against cancer, whereas some deaths which are properly ascribable to cancer are put down to other diseases.

Much ignorance, reticence and secrecy still cling to the subject of cancer in spite of the enlightenment which has come to the civilized world in recent years with reference to so many other diseases.

Pressure is not infrequently brought upon physicians to induce them to hide the existence of cancer, because of the implication of hereditary taint or wrong-doing or both, which is so erroneously thought to attach to it. This secrecy is often encouraged by the physicians themselves. They not infrequently hide from the patient the fact that he has cancer, lest he become despondent at the thought that he must inevitably succumb to it.

Whether cancer is or is not increasing in prevalence in the United States is a question upon which there has been much discussion, but no definite conclusion is warranted with respect to it. Certainly, more deaths are being reported each year in proportion to the population. According to the most reliable statistics available—those of the United States Census Bureau—there are now, roundly, 110,000 deaths from cancer in the United States every year. It appears that the disease is becoming more frequent, but nobody knows. All the deaths are not reported.

No wonder that cancer is a disease above all others which offers the quack with his optimism and promises of relief a chance to make a fortune. It is said to be a very poor business manager indeed who cannot round out $100,000 from a cancer "cure" within a few years.

There is no disease to which western civilization is exposed that is at the same time so prevalent, so incurable and so little responsive to preventive measures as cancer, and yet this fact should neither lead people to melancholia nor to quacks. It should stimulate people to make more active efforts to control the disease.

Cancer can be cured and it can be prevented, but only under certain circum-

stances of which full advantage must be taken. To be cured, cancer must be detected very early.

While the trouble is still narrowly localized, it must be treated skilfully. For the patient to be cured, the growth must be destroyed or removed, not partly, but utterly, to the very last cell.

In cancer of the skin, which offers the best opportunity for early detection and treatment, there should be no great difficulty about this matter. Coöperation between the patient and the family doctor is capable of bringing about a large percentage of cures. In cancer of the breast and uterus, the outlook is less favorable, but nevertheless excellent. Cancer in other locations is more difficult to detect and treat successfully.

The knowledge of cancer among scientific men has progressed considerably in the last dozen years. The progress has been in the better understanding of the established facts, rather than in the discovery of much that is new.

So far as prevention is concerned, only one fact of general application is known, but the possible applications of this fact are innumerable: Chronic irritation often, if not always, is the exciting factor in the causation of cancer. To avoid cancer therefore, it is necessary and perhaps sufficient to avoid the chronic irritation which leads to it. This avoidance calls for coöperation between the patient and the physician. Above all, it depends upon the knowledge and common sense of those who would be protected.

Irritation of the mouth caused by ill-fitting dental plates and irregularities in the teeth, because of the irritations which they produce, should be avoided. Moles and other imperfections of the skin which may be irritated by constant rubbing of the clothing should be removed. Lacerations produced at childbirth should be promptly corrected. Ulcers of the stomach should be given particular attention.

These are but examples of the more common forms of irritation which are inciting causes of cancer. We can say with less ground for assurance but with increasing probability that bacterial growths may serve as foci of irritation.

There is a most promising field for instruction which will bring home a knowledge of the useful and well-established facts about cancer and dispel the fog of ignorance and prejudice and illogical reasoning which have for so long obscured the truth about this disease.

It is encouraging to think that this field is being cultivated by an organization which includes many of the foremost scientists and physicians and surgeons in America, who have an expert acquaintance with cancer, and that under the leadership so afforded, progress is being made in collecting practical information in the prevention and cure of the disease and in disseminating it widely to the people inside and outside of the medical profession, who so greatly need it.

The results of the work of the American Society for the Control of Cancer encourage the belief that headway is being made. Enough lives have not yet been saved to produce a decided effect upon the cancer death rate, but it would be unreasonable to expect any such diminution to occur. There are not enough facts known about the causes and ways of preventing and curing cancer to permit of that as yet. The reported increase in cancer is too rapid.

Information is available from all parts of the United States to the effect that cancer patients are applying to competent physicians in greater numbers than formerly, due allowance being made for the increase in population. Cases are going to competent medical men at much earlier stages, thus offering correspondingly better prospects of cure.

RICKETS AND LIGHT

IT IS NEEDLESS to point out that the discovery and study of vitamins has furnished not only an intensely interesting study, but the practical solution of difficulties which were encountered concerning certain deficiency diseases before their remarkable power was suspected. We undoubtedly have an absolute working knowledge of the prevention and cure of some of the deficiency diseases. Rickets, however, has been a puzzle.

A similar statement may be made about light. While the physical scientists have for many years known a good deal about the wonderful properties of light, it has remained for the physician to show something of its marvelous effect on the bodies of men. Certain gross effects of light on plants have been known even to nonscientific people, but it is evident from recent researches that light has other properties of which we have been entirely ignorant, and which we do not even now understand.

During the past year, reports have been published which a few years ago would possibly have excited incredulity, but in these days when the secrets of nature are being uncovered with a rapidity never before known in the history of the world, we accept them almost as a matter of course. Hess and Weinstock [1] have made the remarkable discovery that such oils as cottonseed and linseed, which are inert in protecting animals from rickets, can be endowed with antirachitic potency by exposing them to the radiations from a mercury vapor lamp. After irradiation, one-tenth of a cubic centimeter daily was added to a known rickets producing diet. Even this very small amount succeeded in protecting rats against rickets, proving that an antirachitic factor had been produced in the test tube and outside of any living organism. This factor remains stored in the oils for a considerable period of time.

The change induced concerns the nonsaponifiable fraction which consists largely of phytosterol. Experiments [2] with phytosterol prepared from cottonseed oil, and cholesterol prepared from brain, showed that both were devoid of antirachitic value in their normal state but became active after irradiation. The hypothesis is advanced by the authors that the skin, which contains a large amount of cholesterol in the superficial layers, is an organ which reacts to particular light waves. The explanation of the phenomena described awaits further investigation.

The action of the rays on growing plants as well as plants already picked, was no less remarkable. Wheat grown in the dark has no antirachitic value, but when grown in the light and irradiated it becomes antirachitic. Green lettuce leaves bought in the market have no value in protecting against rickets, but exposure to the mercury vapor lamp endows them with this power, showing the development of an antirachitic factor in plants, both during growth and after being plucked, under the action of the light.

Steenbock [3] reports that he has succeeded in developing antirachitic factors in other fats by means of irradiation.

These discoveries have an enormous practical value. They do not, however, inform us what the antirachitic factor is nor how many such factors may exist. They do not give us any information as to what vitamins are, though, as a matter of course, everything that we learn about these potent substances brings us nearer to the ultimate discovery of their real nature. That other factors may be involved is indicated by the work at the Lister Institute in London.[4] Miss Hume

has shown that normal growth can be induced for a time in rats fed on a diet deficient in fat-soluble vitamins when exposed to the mercury vapor quartz lamp, but the result is obtained only when wood sawdust, or perhaps some other substances, are in the rat-jar during and after irradiation.

Dr. Robinson of the same institution has discovered an enzyme which exists in bone, ossifying cartilage and teeth, but not in cartilage before ossification begins. The deposition of calcium phosphate under the influence of this enzyme has been demonstrated in vitro in the osteoid tissue of bones taken from rachitic animals.

1. Hess and Weinstock. Am. Pediat. Soc., June 7, 1924 (*Am. J. Dis. Child.*, 1924, 28, 256).
2. Hess, Weinstock and Helman. *J. Biol. Chem.*, March, 1925.
3. Steenbock. *Science*, Sept. 5, 1924.
4. Report of the Medical Research Council, 1923–1924. London.

PARASMALLPOX

UNDER the above title, Dr. Garrow, Medical Officer of Health, Chesterfield, England, gives a very interesting discussion of the disease generally known as "alastrim" or "amaas."[1] During the past two years it has been quite common in parts of England, so that the author has had an excellent opportunity to observe it. His paper is based on 500 cases seen in Chesterfield, for the study of which he was prepared by seeing cases in a number of other towns before the disease reached Chesterfield.

A brief and accurate description of the attack he gives in three words used by a patient: "pimples following influenza." Both patients and physicians are apt to mistake the attack for influenza. The onset is marked by headache, dizziness, pains in body and limbs, and sometimes by more severe disturbances, though nothing like the classical onset of smallpox is ever seen. The temperature runs from 100° to 103°, and subsides by lysis. The patient recovers rapidly and feels well for the remainder of the attack, including the eruptive stage. The final stage of eruption is not the crusts or scabs of smallpox, but consists of rounded, translucent bodies, in size from a pin head to a split pea, resembling amber beads. At times only few amber beads are found, but if their appearance has been preceded by "influenza," the diagnosis is certain.

Of the cases none occurred in persons vaccinated in infancy or under the age of seventeen; no recently vaccinated person was attacked, and no person vaccinated in infancy and re-vaccinated at any age was attacked. Vaccination against smallpox protected absolutely against the disease.

In spite of this, Dr. Garrow holds that parasmallpox is a distinct disease, distinguishable from smallpox on the one hand and chickenpox on the other; that it breeds true, and rigidly maintains its mild type, there being no evidence that it ever assumes a virulent form. In view of these facts, he believes administrative measures might be modified with advantage.

The importance of the question lies in the relation or non-relation of the disease to smallpox. In Trinidad the conclusion was reached after careful study that alastrim was a mild form of smallpox, and investigations by the United States Public Health Service led to the same conclusion.

The trend of the discussion of Dr. Garrow's paper was against his conclusions. It was shown that the malady was not known in well vaccinated communities, and no case had been observed in Scotland, where vaccination has been well carried out in the past.

Until further proof of the non-identity of alastrim and smallpox is given, health officers should be on their guard, and treat alastrim as mild smallpox.

1. Parasmallpox. (Synonyms, Alastrim, Amaas.) An Acute Specific Infectious Disease Distinct from Smallpox. R. P. Garrow, M.D., D.P.H., *Public Health*, London. Feb., 1925.

HEALTH BOOKS AND MAY DAY

DURING the period designated as "Health Book Month," beginning March 21 and ending May 1, there will be an opportunity for health workers to acquaint the public with health education material. The National Health Council and its affiliated organizations have advised with the National Association of Book Publishers in working out the plan, and the Book Publishers will give a vast amount of active selling aid to bookstores throughout the country.

An effort will be made to have bookstores and public libraries prepare lists and hold exhibits of health books. In many cities a "health evening" will be held in public libraries, when new, standard and popular health books will be displayed, and talks given by members of health organizations, school principals, city health officials and librarians. Health magazines and other publications will be urged to feature articles regarding health books. Posters and other publicity material will be supplied to bookstores.

Three groups of books will be featured: Books on health through recreation and outdoor life; books on hygiene, diet, etc., and books on the care and training of children.

This campaign gives health workers a special chance to urge that additional health books be placed in private, school, factory, office, association and club libraries. The Book Service of the American Public Health Association is at the command of health officers and others in giving advice regarding books for gifts and for purchase by public libraries or the libraries of health departments. Health department bulletins from now till May 1 may well carry some health book news.

The campaign will culminate in the nation-wide celebration of National Child Health Day, May 1, which is sponsored by the American Child Health Association, which has issued a Plan Book and a Festival Book. Elaborate plans for widespread coöperation are being worked out. The national and state publicity which will touch every community can readily be capitalized locally wherever health workers can shape their programs to utilize May Day and Health Book Month.

LETTERS TO THE EDITOR

TO THE EDITOR:

I have just undertaken at the request of Mrs. Biggs to write a biography of the late Dr. Hermann M. Biggs. I shall be particularly grateful for copies of correspondence or other material relating to Dr. Biggs' life and work which readers of the AMERICAN JOURNAL OF PUBLIC HEALTH may have in their possession and may be willing to make available for use in this task.

Yours very truly,

C.-E. A. WINSLOW.

Yale School of Medicine,
New Haven, Conn.
Feb. 25, 1925.

TO THE EDITOR:

"Should we include carbonated beverages in the daily menu for home and school?" is the title of an address delivered by Mrs. Virgil Browne, Honorary President of the Louisiana Parent-Teachers Association before the Sixth Annual Conference of the American Bottlers of Carbonated Beverages, Louisville, Ky. The idea is rather new, but it is worth considering. The reasons Mrs. Browne gives for answering her own question in the affirmative are as follows:

1. Much water and home made drinks are unsanitary, whereas bottled goods are safe.

2. Carbonated drinks contain from 0.4 to 0.9 ounces of sugar per bottle, and therefore compare in "food value" with most watery fruits and vegetables.

3. Carbon dioxide is valuable since it is a digestive stimulant, according to Dr. W. W. Skinner of the United States Bureau of Chemistry, and also since it is a disinfectant, according to Dr. C. H. Jones of Mellon Institute.

The speaker advocates beginning an educational campaign to have "pop" placed on the school menu along with milk preparations and fruit juices, since they are comparable in the number of calories furnished per unit of volume.

Mrs. Browne has drawn upon the published researches of scientists to support her arguments, so that her dissertation appears authoritative. However, many important considerations have been overlooked by Mrs. Browne in her zeal to develop her subject logically. For instance, she states that 85 per cent of lakes, ponds, and streams are contaminated and unfit to drink. Water is so easily and so generally purified, it seems quite unnecessary to quote statistics on it in the unpurified state.

The food value of bottled drinks is due almost entirely to the sugar they contain. What a price to pay for sugar! Five or ten cents for a quarter or an half ounce, or $3.20 per pound. Mrs. Browne admits that when she went around preaching thrift in the schools, she discouraged the use of bottled drinks. But that was before she knew about their tremendous food value. The facts in the case are that man does not live by calories alone, but by proteins, minerals, and vitamines also. These are abundant in fruits and vegetables and are entirely lacking in "pop," so that even though their *calorie* value may be the same, it is scarcely accurate to say they have the same *food* value.

Carbonated beverages with natural fruit flavor should not be confused with bottled concentrated fruit juices. The latter do contain minerals and some water-soluble vitamins; but these nutrients are entirely lacking in the majority of bottled beverages, which are made of a sugar syrup and an alcoholic extract carrying the fruit flavor. The fact that a drink is made from a natural fruit flavor does not mean that it contains fruit juice.

Another consideration which must not be overlooked in advocating these drinks for children, is the fact that a large number of them contain caffein. "The introduction of this form of drink has been so favorably received that today there are upwards of fifty-seven varieties," according to M. E. Jaffa. A cup of tea contains about one grain of caffein; a cup of coffee, about one and seven-tenths grains. The average amount of caffein found by the Kentucky Station in other caffein-bearing beverages was 0.8 grain, and some contained as much as 1.25 grains per 6½ ounce bottle.

Agencies interested in child health are spending an enormous amount of energy trying to educate the public to the importance of a simple, nutritious diet regularly administered for growing children. They have succeeded to a large extent in convincing the children themselves that milk and fruit juices are the proper beverages for them. A great moral responsibility rests upon anyone who tries to persuade a child to substitute sweetened, artificially colored and flavored beverages, some drugged with caffein, for the growth stimulating and tissue building foods now in use.

HANNAH A. STILLMAN.

Home Economics Department,
University of Missouri.

ASSOCIATION NEWS

VITAL STATISTICS MEETING

A unique event took place when the Vital Statistics Section of the American Public Health Association held a dinner meeting in New York City on March sixth in coöperation with the American Statistical Association.

Many of the interests of the Vital Statistics Section and the American Statistical Association are closely allied. The latter Association has encouraged the statistical work of the federal and state governments for over seventy-five years, and is taking an active part with the Vital Statistics Section in plans for placing health and safety work upon a sound basis of fact.

The principal addresses of the evening were given by Dr. William H. Davis, Chief Statistician for Vital Statistics of the Federal Bureau of the Census; Dr. Irving Fisher, Professor of Political Economy at Yale University; Dr. Walter F. Willcox, Professor of Economics and Statistics at Cornell University, and Mr. I. Sack, Consultant to the New York State Motor Vehicle Bureau. Brief talks were given by Professor Robert E. Chaddock, President of the American Statistical Association; Mr. Homer N. Calver, Executive Secretary of the American Public Health Association; Dr. Frederick L. Hoffman, Statistician for the Prudential Life Insurance Company; Dr. Wilmer R. Batt, Director of the Bureau of Vital Statistics in the Pennsylvania State Department of Health; Dr. William H. Guilfoy, Director of Division of Vital Statistics in the New York City Health Department; and Mr. George H. Van Buren, Statistician for the Metropolitan Life Insurance Company.

There was an attendance of 103 and the meeting was highly successful. A precedent has been established which members of the Association in other cities might follow with profit.

MUNICIPAL HEALTH DEPARTMENT PRACTICE

A meeting of the Committee on Municipal Health Department Practice was held in New York City on March 7, together with the authors of the chapters of the new report based on the recent surveys made by the United States Public Health Service of cities of over 70,000 population. The report will follow the general lines of *Bulletin 136* which was based on previous studies made by the committee.

Consideration was given to the appraisal form for rating city health work drawn up by the Field Director of the Committee and the American Child Health Association, in coöperation with other organizations of the National Health Council and approved by several city health officers. The printing of the form was approved and it was decided to distribute it free to members of the American Public Health Association. Suggestions were also considered for the future revision of the rating schedule.

The committee accepted the resignation of Dr. Watson S. Rankin as Field Director, the resignation to become effective April 1. Dr. C. St. Clair Drake was appointed acting Field Director, effective May 1. The appointment of Dr. Miriam Pearson McKnight as Office Secretary of the committee was announced.

ST. LOUIS ANNUAL MEETING

The first meeting of the Central Program Committee for the St. Louis Annual Meeting was held in New York City on Saturday, February 21. There was an excellent attendance. The chairmen of seven sections were on hand to represent their groups directly, while the remaining two sections sent vice-chairmen or other representatives. The following people were present:

Dr. Henry F. Vaughan
Mr. Homer N. Calver
Dr. Charles V. Craster
Dr. Norman MacL. Harris
Dr. Henry Field Smyth
Dr. F. C. Blanck
Dr. Charles H. Keene
Mr. James A. Tobey
Miss Alta E. Dines
Mr. Abel Wolman
Dr. H. W. Redfield
Mr. E. G. Routzahn
Dr. William Guilfoy
Mr. George W. Fuller
Mr. Edwin H. Boerth

One of the first items of business was the adoption of the program regulations for the St. Louis Meeting.

"The following standards have been prepared after careful thought by the Central Committee on Programs of the Association. These standards represent an earnest endeavor to obtain for the annual meetings, programs that will be of maximum usefulness and interest to members. Obviously, certain restrictions have been necessary and it is hoped that all speakers will loyally accept these for the good of the Association.

1. Preference should be given to papers that present new information or new viewpoints. Mere encyclopaedic reviews of previous articles are to be avoided.
2. Two copies of abstracts (not exceeding five hundred words) of papers and reports should be submitted to the Secretary of the Association not later than September 1.
3. More than one paper per speaker at an Annual Meeting shall be authorized only by a formal vote of the Central Committee on Programs. Speakers are expected to notify all program officers involved where more than one paper has been offered or invited.
4. Presentations of papers shall be limited to fifteen minutes each. Discussions shall be limited to five minutes per individual.
5. Not more than one person shall be invited in advance and listed in the program to discuss a paper.
6. Papers shall not be listed for reading in the absence of the author.
7. For most programs of a general nature, the maximum number of papers should be three per session. Rarely should the number equal five papers. In the case of highly technical sessions, such as Laboratory, where papers are shorter and discussion limited, exceptions may be necessary.

The purpose of this ruling is to ensure at least thirty to fifty per cent of the time for discussion, which is conceded frequently to be the most valuable part of a meeting.

Obviously all rules such as these are subject to reasonable interpretation, but exceptions to the foregoing shall be authorized only by a formal vote of the Central Committee on Programs."

Much of the discussion centered around the necessity for giving delegates more opportunity to get together to discuss their common problems, as the Association is the only organization that furnishes a place of meeting for workers in all branches of public health to get together on an equal footing. The Forum session which proved so popular last year will be repeated and a larger number of general and joint sessions will be provided. Two especially interesting joint sessions have already been arranged; one on epidemiology to be participated in by the Sections on Public Health Administration, Laboratory, Sanitary Engineering, and Vital Statistics; the other on oyster pollution in which the Public Health Administration, Laboratory, Sanitary Engineering and Food and Drugs Sections will share.

The Conference on Education of Sanitarians which proved so valuable last year will be repeated at St. Louis. It will probably be in the form of a dinner session to which everyone interested in education for health work is invited.

August 1 is the last date for accepting titles of papers, by vote of the Central Program Committee. Correspond with your section chairman at once if you want to offer a paper. All communications regarding the general program and the whole meeting should be addressed to the Executive Secretary.

The Central Program Committee and the Local Committee have set out to make the St. Louis Annual Meeting even more brilliant than the Detroit Convention. Those who attended the Fifty-Third Annual Meeting know that this represents a high goal. Begin now to plan so that nothing will interfere with your attendance at the Fifty-Fourth Annual Meeting, St. Louis, Missouri, October 19–22, 1925.

CORRECTION IN METHODS OF SHELLFISH ANALYSIS

Attention is again called to the correction in the Standard Methods for the Bacteriological Examination of Shellfish made by the Committee on Standard Methods at the Detroit meeting.

In the technical procedure of the analysis of oysters removed from the shell, the paragraph "As oyster meats are diluted with an equal quantity of saline solution the result shall be multiplied by two for a score" was ordered deleted, as no dilution takes place. This is the last paragraph in the first column on page two of the reprint which was taken from the July, 1922, issue of the JOURNAL. Future reprints purchased from the Association will show this paragraph deleted, and those who have copies of the Standard Methods for the Bacteriological Examination of Shellfish should correct them to conform with the ruling of the committee.

PENNSYLVANIA PUBLIC HEALTH ASSOCIATION

The secretary of the association, attended a meeting called by Dr. Charles H. Miner, State Health Officer of Pennsylvania, on February 7 in Harrisburg. Twenty-five persons representing various branches of health work were present, and organized the Pennsylvania Public Health Association. A constitution was adopted, modeled after that of the Virginia Public Health Association, and a tentative organization was effected.

The new association will be limited to professional health workers, and application has been made for affiliation with the American Public Health Association. The first annual meeting of the Pennsylvania Public Health Association will be held in Mt. Alto, Pa., the latter part of June.

LIST OF MEMBERS

Proposed for election to the A.P.H.A., February 1 to February 28, inclusive.

I. P. Agostini, M.D., Havana, Cuba, Direccion de Sanidad Chief of Vaccination, Service of Immigration of the Republic.

W. Alfred Buice, B.S., Waco, Texas, Professor of Bacteriology and Hygiene in Baylor University, Waco, Texas.

D. L. Campbell, D.V.M., Fort Lauderdale, Florida, City Health Officer.

Roy L. Cochran, M.D., McAlester, Okla., Director, Full-Time Health Unit.

George Albert Coleman, B.A., M.A., Berkeley, Calif., Biologist, State Fish and Game Commission, engaged in making a complete survey, biological, bacteriological and chemical, of the lakes and inland waters of the State. (Assoc.)

Thomas B. Downey, Ph.D., Pittsburgh, Pa. (Assoc.)

Dorothy Ketcham, A.M., Ann Arbor, Michigan, Director Social Service, University Hospital.

Virgil Loeb, A.B., M.D., D.D.S., St. Louis, Mo., Consultant in Stomatology in the U. S. Public Health Service, St. Louis, Mo.

Daniel Lawrence Lynch, M.D., Boston, Mass., Medical Director, New England Telephone and Telegraph Co., Boston, Mass.

Joseph F. Murray, South Orange, N. J., Engineer, Passaic Valley Sewerage Commission.

Sobey Okuyama, D.V.M., M.S., Genesee Depot, Wis., Certified Dairy Herd Inspector for Chicago and Milwaukee Medical Milk Comm. (Assoc.)

J. D. Pettet, M.D., Arcadia, Kansas, County Health Officer.

Charles Fisk Rogers, A.B., Cleveland, Ohio, Field Agent and County Representative, Anti-Tuberculosis League of Cleveland.

Dr. W. L. Thiedeman, Muskegon, Mich., State Hospital for Insane, Wisconsin, Public School Work. (Assoc.)

M. L. Townsend, M.D., Raleigh, N. C., Director of Health Education.

Walter S. Ufford, Ph.D., Washington, D. C., Secretary, Association for the Prevention of Tuberculosis of the District of Columbia.

Borden S. Veeder, M.D., St. Louis, Mo., Director, Infant Welfare Work, Director and Chairman, Medical Advisory Board, American Child Health Association.

Marguerite A. Wales, A.B., R.N., New York, N. Y., General Director, Henry Street Visiting Nurse Service.

SUSTAINING MEMBERS

The Guardian Life Insurance Company of America, New York, N. Y.

Life and Casualty Insurance Company of Tennessee, Nashville, Tenn.

United Life and Accident Insurance Company, Concord, N. H.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to office in New York City. In replying give age, professional training, salary requirement, previous positions held and three or more references.

Wanted: By the City Board of Health, Sidney, O. (8,500 population), a public health nurse, capable of organizing and teaching mothers' clinics, nutrition classes, etc., and helping with a generalized nursing program—to supervise, but share duties with one other nurse. Salary $150 per month. Address Health Department, Sidney, O.

Wanted: Deputy Health Commissioner for the most populous county in the State of Ohio. Position will pay $3,000 a year to start, with prospects of advancement. In making your application kindly give full particulars with your first letter as this position will be filled soon. Address, Dr. Robert Lockhart, County Health Commissioner, Cuyahoga County, West 3d Street Court House, Cleveland, O.

Wanted: Woman physician for rural section in the South in connection with Healthmobile demonstration. Must know child hygiene and be able to give public health talks. State qualifications, experience and salary required. Address 594 E., care this JOURNAL, New York address.

Wanted: Two assistant physicians at state tuberculosis sanatoria. Must have had general interneship or experience in a tuberculosis sanatorium. Salary $1,440 per year with maintenance. Address 595 E., care this JOURNAL, New York address.

GOOD PERMANENT POSITION
Open to Right Man
Must be graduate of medicine—not over 40 years of age and willing to travel. Must be familiar with biologicals and have good knowledge of biological therapy. Give full details concerning experience, references, and state salary expected. Address Professional Service Department
E. R. SQUIBB & SONS
NEW YORK

POSITION WANTED

Health Education: Young woman of 33 with eight years' experience in many phases of health education work on community scale, with industrial groups and in schools, desires position as director of health educational work in the East or South. Has done pioneer health work, public speaking, organizing and executive work in community health. Familiar with racial and foreign groups. Address 321 A. M., care of this JOURNAL, New York address.

Laboratory Position: Young woman chemist and bacteriologist, wishing to broaden experience, desires laboratory position. B.S. and M.S. degrees from midwest college and university; seven years' experience in charge of municipal health laboratory in city of 140,000. Prefers public health work but would consider position in a good hospital. Address 346 S. M., care of this JOURNAL, New York address.

Wanted: Physician, 40 years old, American, 12 years' practical experience in public health work, desires a position as a full-time health officer, or a position with a recognized health organization. Address 348 M. F., care of this JOURNAL, New York address.

Wanted: Position as director or assistant director of public health laboratory. Thoroughly versed in all modern laboratory procedures—eleven years' experience—at present director of municipal laboratory but wish to change for good reason. Can furnish excellent references. Address 314 M. R., care this JOURNAL, New York address.

Wanted: Position as full-time city health officer. Graduate in medicine and public health. Eight years with United States Indian Service and four years as director of a county health department. Unimpeachable references can be given. Available for service July 1. Address 285 G. V., care this JOURNAL, New York address.

Wanted: Opportunity wanted by pathologist, theoretically and practically trained in tissue diagnosis, serology, hematology, blood chemistry and bacteriology; was director of base hospital laboratory; ten years' experience; willing to qualify by examination if required; preferring outside teaching connection also; owning complete laboratory equipment; available fall 1925; any location; single, Protestant. Address 336 W. S., care this JOURNAL, New York address.

Public Health Administrator: Thoroughly experienced and seasoned health administrator in all departments desires position as public health executive or chief of a public health division. Capable of organization as well as administration. Graduate in medicine and public health. Excellent references furnished. Address 331 J. J., care of this JOURNAL, New York address.

Wanted: Position in public health work by a woman physician, who has a background of experience for fifteen years in general medical practice in a large city, four years of public lecture work for a national organization, three years of teaching health and hygiene in a state normal school, with the medical inspection of the primary, intermediate and junior high school pupils of the training school. Address 349 H. A., care this JOURNAL, New York address.

Wanted: Young physician, Columbia graduate, wants public health or industrial position, full- or part-time. Recent experience, one year with the Veterans' Bureau and one year with the General Electric Company. Capable of routine or research. Licensed in New York and New Jersey. Excellent references. Address 342 E. S., care this JOURNAL, New York address.

BOOKS AND REPORTS

Commercial Fruit and Vegetable Products—*W. V. Cruess, Associate Professor of Fruit Products, University of California. New York: McGraw-Hill Book Company, Inc.*, 1924. First edition. Pp. 509. Cloth, Price, $4.50.

Seldom has a book come to our attention which has made such a favorable impression. In its thirty chapters there is a wealth of up-to-date and authoritative information presented in logical sequence and in interesting form. Consideration is given to the varieties of fruits and vegetables best suited to the preparation of the various products, to the culling and grading, to the technology of the processing, to the forms of spoilage which may appear and to other difficulties which may be encountered and how these may be solved. For some products, such as the fruit syrups, it not only treats of present practices but points the way for future development. Each chapter is followed by a good bibliography.

The book is one of the series of McGraw-Hill agricultural and biological publications, of which Charles V. Piper is consulting editor, and announces itself to be a textbook for student, investigator and manufacturer. While the text is based upon lectures given by the author to students in fruit and vegetable products during the past ten years and the subject matter is developed from the standpoint of the instructor rather than from that of the manufacturer, yet commercial canners and others engaged in the fruit and vegetable products industries will find the book of direct value in the operation and control of their plants, while food control officials will find the information which is presented by so well recognized an authority as Professor Cruess to be of great help in a thorough understanding of the scientific methods and principles which are employed in the fruit and vegetable industries.

From the public health point of view, the chapters which are of especial interest are those on Microörganisms in Relation to Fruit and Vegetable Products, The Tin Container, Grading Fruits and Vegetables, Pickling and Canning Ripe Olives, The Spoiling of Canned Foods, and The Vitamines in Relation to Fruit and Vegetable Products.

The print is clear and the binding strong.

H. W. REDFIELD

The Character of Races as Influenced by Physical Environment, Natural Selection and Historical Development—*By Ellsworth Huntington. New York: Charles Scribner's Sons,* 1924. xvi+391 pp., 19 pls. Price, $5.00.

The selective action of the environment is the theme of Professor Huntington's interesting and valuable treatise. It is true that he stresses the moulding action of the environmental factors of glacial climates and of the physical hardships endured by man at times of migration before the days of the Pullman and limousine; but he seems also to recognize the fact that these external conditions do not create the human qualities which the environment destroys or which endure through the great catastrophic crises such as migration, famine and war. The investigation of the environment yields many suggestions that man's surroundings stimulate behavior of one kind or suppress another. Rainfalls and forestation favor the arboreal mode of life in primates, while aridity on the other hand favors the life in the open and frees the hands for tools and weapons.

It is of interest to note how little use is made in this work of the factor of disease as related to environmental factors. Obviously there are no records from the past at all adequate for this purpose, but existing conditions and the recent histories of native races are highly suggestive of the very great importance of disease in the extermination of races. The striking differences in susceptibilities and immunities create selective processes both within the race and between different races. The socially-minded, gregarious and travelled type is wont to have acquired immunities early in life as over against the non-social isolated one. Capacity to acquire immunities does not, however, seem in any way to be correlated with desirable human traits either physical or mental. Initiative which leads to racial expansion and migration inevitably tends to increase exposure to infection, and possibly this assists in the preservation of more resistant strains and in the elimination of the less resistant.

The author makes much of the selective action of the environment operating at times of migration, as for example in the glacial epoch, in Northern China with recurrent famine, in the peopling of New England, and in the settlement of California. It coöperates with human behavior based on racial capacities and aids in the conservation of types with the initiative and enterprise to act and competent to survive the ordeals of new conditions.

The revolution in human activities due to industrial advances in the past century have created new urban environments and selective processes of vital import to the future of the race. Migration, birth control, and racial mixtures are playing havoc with racial stocks developed by milleniums of selection. Man's conscious and intelligent effort to control his own racial future and to retain a normal environment is the goal to be sought. Vital statisticians and public health administrators will find facts and interpretations which will add new meaning to their enterprises and everyone interested in the significance of human environment will be stimulated, though perhaps at times unconvinced by the arguments of this interesting treatise.

C. A. KOFOID, PH.D.

Mind and Medicine—*By Thomas W. Salmon. New York: Columbia University Press,* 1924. Price, $1.00.

An address at the opening session of the College of Physicians and Surgeons, Columbia University, given by Professor Salmon in September, 1923, has been reprinted under the above caption.

In this address, Professor Salmon invites attention to the failure on the part of most well trained medical men to include in their work a study of the insane and of the psychoneurotics. He is the authority for the statement that Dr. W. J. Mayo not long ago said that neurasthenia, psychasthenia, hysteria, and allied neuroses were the causes of more human misery than tuberculosis or cancer. In a kindly way, the author charges that physicians are so engrossed with that side of medicine which can be demonstrated to exist through the medium of proven pathological lesions, that we fail to treat adequately these mental cases which are functional rather than structural.

It is this lack of sympathetic study and lack of relief rendered from their fears and emotions which the author believes makes this class of patients such a fertile field for the cultist and the charlatan. He urges medical men to study the patient as a whole, and to practice the art as well as the practice of medicine.

A. G. BOWER, M.D.

The Education of Handicapped Children.—*By J. E. Wallace Wallin, Ph.D., Director, Bureau of Special Education and Psycho-Educational Clinic, and Professor of Clinical Psychology, Miami University. Boston: Houghton Mifflin Company,* 1924. Cloth, price $2.25.

This is a volume of the Riverside Text Books in Education, edited by Ellwood P. Cubberley.

For the past twenty-five years or more the various states have been busy passing laws requiring the education of children, and as a result children of subnormal mental capacity, as well as those suffering from physical defects, have been forced into school. The schools have thus had a new burden, for which they were not prepared, thrust upon them. It has been found necessary to diagnosticate the cases, classify them properly and to adjust the curriculum to suit these cases. The present volume is written by a man who has given long and successful attention to the problems involved.

The book is divided into three parts, the first of which gives a most interesting history of the education of children who are handicapped. It contains also the theories concerning feeble-mindedness, and definitions of the various conditions included more or less generally under this term. The second part is devoted entirely to the education of these children, including the organization of special instruction and the technical requirements necessary for the instruction of children who have various physical and mental defects. The third part, in which the readers of this JOURNAL will be particularly interested, gives a discussion of the social menace of the feeble-minded. This section goes into the various questions of inheritance and the relation of feeble-mindedness to criminality, immorality, inebriety, pauperism, and vagrancy.

The book shows throughout the result of careful study, observation and a wide acquaintance with literature. It leaves one with a firm conviction of the necessity of taking care of these unfortunates, and of their menace to the future stability of our country. The author refers quite often to the army tests, some of the fallacies of which have been so often exposed. He goes at some length into the relation of alcoholism to mental defects. Unfortunately some of his quotations are lamentably out of date, and in certain cases the omission of later work by those quoted is noted. On the whole the book is a most valuable one and will doubtless have a wide circulation in its proper field. The printing, binding, and illustrations are good, although the proof reading might have been better.

M. P. RAVENEL, M.D.

Infantile Paralysis in Vermont, 1894–1922.—*A Memorial to Charles S. Caverly, M.D. Distributed by the Vermont State Board of Health. Burlington, Vermont,* 1924. Cloth.

The State Board of Health has done a real service in collecting the data contained in this volume and in giving it to the world. It consists largely of the reports and articles written by Dr. Caverly during his long service to the state, and in addition a number of contributions from those who worked with him or after his death. Among these the name of Dr. Robert W. Lovett stands out, he having had charge of the after-care of cases of infantile paralysis in the state since December, 1914. Since the first known epidemic of considerable size in this country occurred in Vermont in 1894, it is fitting that Vermont should have issued this volume. The laboratory researches which are described in this volume were done by Drs. Amoss, Taylor and Aycock, under the supervision of Dr. Flexner. The volume is really a well considered treatise on this most puzzling and dreaded disease which can be commended to the attention of all who are interested in it, whatever may be their particular point of view.

M. P. RAVENEL, M.D.

Lighting in Relation to Public Health.—*By Janet Howell Clark. Baltimore: Williams and Wilkins Co.* Price, $4.00.

We have long needed an adequate book on illumination as a public health problem, and Dr. Clark has met this need most efficiently. Her work differs from the usual treatises on this subject in greatly simplifying physical details and in including an admirable review of the physiological aspects of the subject. She makes clear the various methods used in the study of illumination; discusses standards of lighting and the avoidance of glare, and applies general principles to the lighting of schools, factories and other places. The data have been critically analyzed and are presented with remarkable clearness and the treatment of diseases due to abnormal light conditions or other occupational factors is excellent.

C.-E. A. WINSLOW.

Statistical **Method**—*By Truman L. Kelley, Ph.D. New York: Macmillan Co.* Price, $4.00.

This book is an excellent exposition of statistical method as developed by Pearson and his followers. It is intended to meet the needs of biologists, economists, educators, and psychologists. Most of the subjects dealt with are treated in the usual manner, but upon correlation the author has laid great stress, covering the field exhaustively, which might lead to the inference that he expects it to be a most fruitful method of analysis. The chief value of the book lies in the manner in which he carefully weighs and analyzes his material and presents to the reader very clearly the various assumptions underlying and the limitations inherent in the numerous formulæ given. One must commend the consistent estimation of probable errors which he hopes is at least better than no estimate at all. The convenient arrangement of the book adds greatly to its usefulness for reference by the novice, without limiting its value to the student. Although it does not treat directly the theoretical problems of vital statistics yet those in that field will find many of the formulæ applicable and the critical analysis of them helpful. C. R. D.

Preparation **of Scientific and Technical** Papers—*By Sam F. Trelease and Emma Sarepta Yule. Baltimore: Williams & Wilkins.* 113 pp. Price, $1.50.

Authors of scientific papers and editors of journals are indebted to the authors of this booklet for a precise, concise and comprehensive treatment of the technique of writing for publication. Its value for the beginner is enhanced by its simplicity and by the completeness of the discussion of even the elemental matters of preparation of manuscript and by the abundance of illustrative citations. The text treats of the assembling of scientific data, the organization of the text, its corrections for each and all of the numerous phases requiring review and inspection, its alteration and emendation, and its final form for the printer's use. Especial attention is given to the preparation of tabular matter, bibliographies of several types, citations, abbreviations, and the use of italics. A particularly useful list of abbreviations for a considerable number of scientific journals is included. It is to be hoped that in the next edition the authors will expand their chapter on drawings and elaborate the subject of the technique of scientific illustration and include therein the carbon pencil, and the Ross board, as well as the India ink method.—C. A. K.

Immunity in Natural Infectious Diseases—*By F. d'Herelle, Director of the Laboratory of the International Sanitary Council at Alexandria, Egypt. Authorized translation by George H. Smith, Associate Professor of Bacteriology and Immunology of the School of Medicine, Yale University. Baltimore: Williams & Wilkins Company,* 1924. 400 pp. Cloth. Price, $5.00.

The announcement of a new book by d'Herelle will be hailed by all bacteriologists. Few books have appeared in the past years which have attracted as much attention and stimulated as much research work as "The Bacteriophage," and anything which he puts out will be studied with interest.

The mechanism of immunity is not yet understood and none of the theories offered so far have explained all the phenomena observed satisfactorily. While we may not be able to accept entirely the new ideas put forward in this book, they will appeal to everyone as having a rational basis and as having been very carefully worked out.

The author constructs his ideas of immunity on present day conceptions of colloidal chemistry. He argues that all living matter occurs in the colloidal state and the unit of structure is the micella, the smallest possible particle of protein matter. Each micella possesses the power of assimilation, of adaptation, of multiplication, and of variability. A state of colloidal equilibrium is necessary to maintain life and this state calls for adaptation of the micellæ. Entrance into the body of either crystalloid or colloid substances must be met by an adjustment on the part of the micellæ if the state of colloidal equilibrium is to be preserved.

Metabolic processes are closely associated with reactions involving electronic equilibrium. The author suggests that the electrical processes which take place within the cell reach their maximum at the moment of mitosis when there is polarization of the micellæ in an electric field.

Since antigens are colloidal in nature their injection into the body must produce modification of the body fluids. There is but one

specific reaction, one response of living matter, and that is the "flocculin." The flocculating antibody is not a substance, but rather a property resulting from a state of colloidal equilibrium of the blood plasma. In somewhat the same way complement does not exist in the blood, but is a product of the laboratory. There is but one "antibody" and this leads to but a single phenomenon—flocculation. All immune reactions—precipitation, agglutination, fixation of complement, bactericidal action, bacteriolysis, opsonic action, anaphylactic sensitization have their end result in flocculation.

The last part of the book includes and elaborates upon many of the theories regarding the bacteriophage which were given in the author's first book.

Acceptance of d'Herelle's theories demands a radical modification of many of our old ideas regarding immune processes. With the advances in colloidal chemistry and the application of these principles to living matter it would seem that our old views could not escape radical modification and that our newer views must recognize these laws and accept life as a "physico-chemical reaction." The views of d'Herelle are rational and in accord with the work of Loeb and others on the behavior of proteins.

The book offers fascinating reading and will undoubtedly stimulate worth-while work. The translation is well done and the make-up of the book excellent. M. P. RAVENEL, M.D.

Concealed Tuberculosis or "Tired Sickness" —*By George Douglass Head, B.S., M.D. Philadelphia: Blakiston,* 1924. Pp. 135. Price, $2.00.

In writing this little book Dr. Head has achieved a worthy purpose in again calling the attention of the medical profession to the fact that much tuberculous infection occurs in adult life which is passed by unrecognized. Neurasthenia is too often the convenient term used to cover a multitude of sins. Too many suffering under a well defined nerve-exhaustion syndrome, have been classed as neurasthenic when in reality they are the victims of clinical pulmonary tuberculosis or the toxemia arising from some other low grade chronic infection.

Dr. Head claims, however, not to be discussing clinical pulmonary tuberculosis, but simply tuberculous infection, which fails to give rise to definite physical signs and which the author therefore terms "latent or concealed tuberculosis." These are by no means new terms, but in describing this particular symptom-complex under these titles, we believe that little is served in the way of clarifying the matter. The more one reviews the text, studies his description of the symptoms, the diagnostic points, and especially his some thirty case reports, the more one senses that definite clinical pulmonary tuberculosis enters, to a greater or less degree, into a basic consideration of the whole discussion. The clinical manifestations are "latent and concealed" only in so far as insufficient means have been utilized to make them become more apparent. Were all aids to diagnosis employed, most of the cases which the author reports would in all probability be less concealed. In at least half of them the radiogram had not been used. All informed clinicians know today that many cases of tuberculosis, some subjected to even the most expert physical examination, are difficult of demonstration and therefore may be called masked; but which readily become unmasked through the use of the telltale penetrating ray. Several other cases of the author's had been rayed and the radiographic reports had shown definite mottling in the pulmonic fields. Why, then, are they not cases of clinical pulmonary tuberculosis? Another case had positive sputum. Why call this "concealed" tuberculosis? And yet he maintains he purposes to exclude all this from his discussion. It is not convincing.

Again, the author lays great store by the subcutaneous tuberculin test, claiming for it a like specificity and significance as attaches to the Wassermann test for lues. Surely, this is a novel and original interpretation, though quite at variance with the conclusions drawn by a majority of the thoughtful serologists and clinicians throughout the world. Were we to accuse everyone reacting positively to a subcutaneous tuberculin injection of harboring tuberculosis, we would, of course, be right; but it would not mean anything. It would merely indicate the ubiquitous presence of acid-fast infection in man—a fact we are already well acquainted with—but to call it concealed or latent or marked, or what not, clarifies the situation not at all. No new paths are thus to be opened up; no illuminating beacon thus established. FOSTER MURRAY.

HEALTH DEPARTMENT REPORTS

Cambridge, **Massachusetts**—The Board of Health presents its annual report for the year ending December 31, 1923. This is the 47th annual report of Cambridge's Board of Health.

The general death rate for 1923 was 13.69 per 1,000 population, while the death rate for residents only was 13.28. Both of these rates are slightly higher than those in 1922, due principally to an increase in deaths from cancer and pneumonia. The number of deaths from tuberculosis, whooping cough, bronchitis, and diarrhea and enteritis is the lowest in the record of the city. There has been a decrease in deaths from pulmonary tuberculosis from a rate of 225 per 100,000 in 1900 to 71 in 1923, on a basis of resident population. Deaths from diarrhea and enteritis (under two years of age) have decreased from 66 in 1914 to 19 in 1923, the lowest in the city's history. The maternal mortality has been reduced to 3.64 per 1,000 total births.

The city has the third best infant mortality rate for cities of its size in the country. The rate for the year was 62.5 per 1,000 living births. This is considerably lower than the average rate of 78 for cities of Massachusetts. The low rate for the city is a reduction of 19.2 points over the 1920 rate of 81.7.

In the early part of the year an appropriation was voted to engage a part-time physician to carry on the work of Schick testing and diphtheria immunization in the schools. A campaign was started in the schools and over 3,000 school children were tested. Those who reacted positively were given three doses of toxin-antitoxin. After six months these children were retested to determine their immunity. This work took most of the summer and fall and therefore did not materially affect the morbidity or mortality rates from diphtheria for the year.

Cattaraugus County, New York—Dr. Leverett D. Bristol, County Health Officer and Director of Demonstration, submits the first annual report on the activities of the County Board of Health and the Cattaraugus County Health Demonstration for the year ending December 31, 1923.

The Cattaraugus County Health Demonstration is a project in a typical rural county in New York State, and is one of the three demonstrations conducted by the Milbank Memorial Fund for the control of tuberculosis and the general promotion of public health. This demonstration began in January, 1923, with the creation of a general health district by the County's Board of Supervisors. After the establishment of the health district, the only two cities in the county, Olean and Salamanca, decided to join, thus making the district include the whole county—the first county health district to be established in New York State.

The general health program during the year has consisted in the establishment and operation of a county department of health, the provision of a county-wide school medical service for the promotion of school hygiene, and the provision of a program in health education. In order to render adequate service to the entire county and carry out a comprehensive program, the county was divided into six districts, and a branch station of the county department of health was established in each district. These stations serve as headquarters for public health nursing, for clinics, and for other activities in connection with the work of the county health department.

For purposes of administration of the work of the County Board of Health and Demonstration, six bureaus were established as subdivisions of the County Department: Bureau of Tuberculosis, Bureau of Communicable Diseases (other than Tuberculosis), Bureau of the County Diagnostic Laboratory, Bureau of Health Education and Publicity (operated through the County Tuberculosis and Public Health Association), Bureau of Statistical Records and Reports, and a Bureau of Maternity, Infant and Child Hygiene.

The report contains no statistical data regarding mortality and births for the year. A summary of all communicable diseases reported to the County Health Officer during 1923 is given, as well as a laboratory report showing the number of specimens examined.

New York City Bureau of Child Hygiene—The annual report on the work of the bureau of child hygiene of the New York City Department of Health, for the year 1923, should be of interest to all workers in this particular field. The report points with pride to the infant mortality rate for 1923, which is 66

per 1,000 reported births, the lowest rate in ten of the largest cities in the birth registration area of the United States.

During the year 21.3 per cent of the total recorded births were delivered by midwives as compared with 40.35 per cent in 1909, when supervision of midwives was first undertaken. So successful has this supervision been and so complete the coöperation obtained that no case of puerperal sepsis and only 2 cases of serious eye affections of the new-born were reported during the year. In fact, the requirements of the sanitary code that midwives instill a solution of silver nitrate in the eyes of all new-born babies proved so effective that a new section was added to the code requiring physicians or other attendants at birth to use the same method of treatment.

Of the total deaths under one year of age, the contagious disease rate was 1.9, respiratory rate 12.7 and the diarrheal rate 10.0 as compared with the congenital rate 33.4. Fifty-four per cent of the babies under six months of age enrolled in 33 baby health stations in Manhattan were exclusively breast fed.

Supplementing the work of baby health stations all available school nurses are assigned during the summer vacation period to district visiting, canvassing homes for babies under one year of age. Each nurse was required to enroll 150 babies for the summer months, during 1923, visiting them at stated intervals when well, and watching over them during illness. During the year a total of 13,701 babies were enrolled for supervision in this manner.

The plan for school medical inspection work stresses the importance of giving a complete physical examination to every new child entering the school, a second examination in the third year of school life, and a third examination in the sixth year. This latter is carried out in but few schools.

A total of 299,453 children were examined, during the year, with the following percentages of defects observed:

Defective vision	9.3%
Defective hearing	0.7%
Defective teeth	55.1%
Defective nasal breathing	12.6%
Enlarged tonsils	14.8%
Cardiac disease	1.1%
Pulmonary disease	0.1%
Orthopedic defects	0.7%
Nervous disease	0.6%
Defective nutrition	14.2%

The department of education excludes all children referred through the principals, as being persistently unclean. As soon as the child is excluded it is referred to the bureau of attendants as a truant. It is then followed up, and unless it returns to school in a day or two presenting evidences of an effort to clean up, the parents are summoned to court and in many instances fines, ranging from $1 to $10 have been imposed.

Parents are urged to attend school at the time their children are being examined, in order that the school physician may discuss with them the problems of the child's health, point out existing defects and advise with regard to their correction. They are also encouraged to come to school and discuss their children's health and hygiene problems with the school nurse.

The special classes established in the schools, in part or wholly under supervision of the department of health, further demonstrate the value of scientific knowledge required in the treatment of the growing child. "Sufferers from progressive myopia and other serious eye conditions have had their vision preserved or restored in sight conservation classes; the open-air classes have brought back to health or kept in good condition many children through examinations and instructions given them."

Practically all tuberculosis contacts among children are reached by nurses in an effort to place them in open-air classes, and in the same way marked cases of malnourished children are discovered and properly placed. This work seems to indicate the establishment of a large number of open-window classes, in contrast with open-air classes, as of more distinct value to the school system, in that a larger number of children can be benefited than can be provided for in open-air classes.

During the year, eye clinics gave medical treatments of contagious and other diseases of the eye, and refractions. A large number of children were furnished with prescriptions for glasses. Children whose reading capacity with the better eye, tested with the Snellen chart, is 20/50 or worse are referred to one or the other of the ten eye clinics conducted by the Department of Health.

For further particulars regarding numbers and percentages one should consult the report which was published in the *Monthly Bulletin* of the Department of Health, New York City, December, 1924.

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BOOKS RECEIVED

Books received during February are listed here. Many of these will be reviewed.

INANITION AND MALNUTRITION. By C. M. Jackson, M.D. Philadelphia, Blakiston, 1925. Pp. 616. Price, $8.00.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES FOR THE FISCAL YEAR 1923. Government Printing Office, 1923. Pp. 316.

THE PSYCHOLOGY OF THE PRESCHOOL CHILD. By Bird T. Baldwin, Ph.D., and Lorle I. Stecher, Ph.D. New York: Appleton, 1924. Pp. 300. Price, $2.25.

FUNDAMENTALS OF BIO-CHEMISTRY IN RELATION TO HUMAN PHYSIOLOGY. By T. R. Parsons. Cambridge, Eng.: W. Heffer & Sons. Baltimore: Williams & Wilkins, 1925. Pp. 295. Price, $3.00.

SKILL IN WORK AND PLAY. By T. H. Pear, M.A., B.Sc. New York: Dutton, 1924. Pp. 107. Price, $2.00.

INFECTION, IMMUNITY AND INFLAMMATION. By Fraser B. Gurd, B.A., M.D. St. Louis: Mosby, 1924. Pp. 329. Price, $5.00.

WHEN LIFE LOSES ITS ZEST. By Abraham Myerson, M.D. Boston: Little, Brown, 1925. Pp. 218. Price, $1.75.

THE INTERNAL SECRETIONS OF THE SEX GLANDS. By Alexander Lipschutz, M.D. Baltimore: Williams & Wilkins, 1924. Pp. 513. Price, $6.00.

ARROWSMITH. By Sinclair Lewis. New York: Harcourt, Brace, 1925. Pp. 448. Price, $2.00.

INTERNATIONAL CONFERENCE ON HEALTH PROBLEMS IN TROPICAL AMERICA. Held at Jamaica, B. W. I., July 22 to August 1, 1924, by invitation of Medical Department United Fruit Co. Boston: United Fruit Co., 1924. Pp. 1010.

THE MENTAL GROWTH OF THE PRE-SCHOOL CHILD. By Arnold Gesell, Ph.D., M.D. New York: Macmillan, 1925. Pp. 447. Price, $3.50.

FAMILY WELFARE WORK IN A METROPOLITAN COMMUNITY: SELECTED CASE RECORDS. By Sophonisba P. Breckinridge. Chicago: Univ. of Chicago Press, 1924. Pp. 950. Price, $4.50.

THE ERYTHROCYTE AND THE ACTION OF SIMPLE HAEMOLYSINS. By Eric Ponder. Edinburgh: Oliver & Boyd, 1924. Pp. 192. Price, 12/6.

DIABETIC DIET—A HANDBOOK FOR DIABETICS. By A. Doris McHenry, B.A., and Marjorie M. Cooper, B.A. New York: Harper, 1925. Pp. 62. Price, $2.00.

PRECIS-ATLAS DE DISSECTIONS DE ZOOLOGIE. By A. Bonnet. Paris: Librairie Octave Doin, 1924. Pp. 416. Price, 20 fr.

GOOD HEALTH AND LONG LIFE. By Lucien Calvin Warner. New York: Association Press, 1925. Pp. 128. Price, $1.25.

THE DEGENERATIVE DISEASES. By Lewellys F. Barker, M.D., and Thomas P. Sprunt, M.D. New York: Harper, 1925. Pp. 254. Price, $4.00.

MEDICAL EDUCATION. A Comparative Study. By Abraham Flexner. New York: Macmillan, 1925. Pp. 334. Price, $2.50.

THE BABY'S FIRST TWO YEARS. By Dr. Richard M. Smith and Mrs. Henry Copley Green. Boston and New York: Houghton Mifflin, 1924. Pp. 159. Price, $1.75.

SERUM DIAGNOSIS OF SYPHILIS BY PRECIPITATION. By R. L. Kahn, Sc.D. Baltimore: Williams & Wilkins, 1925. Pp. 237. Price, $3.00.

ELEMENTARY ANATOMY AND PHYSIOLOGY FOR NURSES. By H. Clifford Barclay. New York: William Wood, 1925. Pp. 411. Price, $3.50.

TRANSACTIONS OF THE FIFTH BIENNIAL CONGRESS OF THE FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE HELD AT SINGAPORE, 1923. Edited by the Hon. Dr. A. L. Hoops and Dr. J. W. Scharff. London: John Bale, Sons & Danielsson, 1924. Pp. 974. Price, 40/—.

MEDICAL CERTIFICATION FOR MARRIAGE. By Fred S. Hall. New York: Russell Sage Foundation, 1925. Pp. 92. Price, 50c.

A COMPEND OF GENITO-URINARY DISEASES AND SYPHILIS. 4th Ed. By Charles S. Hirsch, M.D. Philadelphia: Blakiston, 1925. Pp. 337. Price, $2.00.

SEWERAGE AND SEWAGE TREATMENT. 2nd ed. rev. By Harold E. Babbitt. New York: John Wiley & Sons, 1925. Pp. 516. Price, $5.00.

Books can be conveniently purchased through the Book Service of the American Public Health Association, 370 Seventh Avenue, New York City

PUBLIC HEALTH NOTES

School **Health Program Study**—Eighty-nine public, parochial, and private schools have enrolled in the School Health Program study being conducted by the American Child Health Association. Twenty-eight states and the District of Columbia are represented in the enrollment.

This study aims primarily to gather all valuable data developing from health programs being directed by individual schools. The achievements and suggestions offered by the schools submitting programs will be published in a report to serve as a source of material for other schools in the country that need advice and assistance. The Association is offering $1,000 to be divided among the three schools contributing the most valuable programs. This award is to be used to further the health program of the school.

The salient points on which the judging committee will make their recommendations are: (1) Health Training and Instructions (the development of good health habits, desirable attitudes and practical health knowledge); (2) Hygienic Arrangement and Administration of the School Program for the Pupil and Teacher; (3) Physical Training Program; (4) Hygiene of the School Plant. The schools have been entered under a code number in order that the committee may rate the schools with unbiased opinion. Announcement of the three winning schools will be made at the beginning of the school year in September, 1925.

Joint Information Bureau, Moscow—In an attempt to overcome the unsatisfactory lack of contact between scientists and scientific and cultural organizations of the Union of Soviet Republics and other countries, a special organization has been brought to life. This is the Joint Information Bureau which was created in Moscow.

The Bureau is in constant communication with most of the scientific and cultural establishments and institutions of the Soviet Union and is in a position to facilitate regular contact, as well as an exchange of scientific periodical and non-periodical publications, between the interested institutions, groups and individuals of the Union and other countries.

Personal exchange of their works between scientists engaged in similar research activities could also be arranged as well as the publication of unpublished manuscripts and articles in the general periodical and special press.

At the request of the Joint Information Bureau in Moscow the Russian Information Bureau in Washington has undertaken to represent the Moscow Bureau in its endeavors which will no doubt be in the mutual interest of both countries.

The interested institutions, organizations and individuals may apply to the Russian Information Bureau, 2819 Connecticut Avenue, N. W., Washington, D. C.

A. H. A. Again Chooses Dr. Walsh—Dr. William H. Walsh of New York has been appointed Executive Secretary of the American Hospital Association, succeeding Dr. A. R. Warner. This is the second time that Dr. Walsh has held this position, as he served in this capacity, 1917-1918, as the first full-time executive secretary of the Association. He began his new duties on March 1.

Canadian Social Hygiene Council Receives Grant—The Metropolitan Life Insurance Company of New York recently made a grant of $15,000 to the Canadian Social Hygiene Council to aid in extending throughout Canada child welfare and educational activities along the line of social hygiene. This grant will now enable organizers for the western and eastern provinces to take the field at once, in order to reach all the rural and urban communities in Canada, and to stimulate the work of the fifty existing branches of the Council. In addition, an expert will be put in charge of the educational policy to work out a national plan for the education of the young in the fundamentals of social hygiene.

A Public Health Summer Course—The Massachusetts Institute of Technology announces that it is expanding its summer instruction in Public Health and Public Health Education this year. Courses in Health Education Methods, Health Records and Statistical Procedure, General Bacteriology, Public Health Laboratory Methods and Research in Industrial Microbiology are offered. Credit for these courses will be given by the Institute and may be applied to a Doctor of Public Health degree. A certificate will also be given by the Division of University Extension of the Massachusetts Department of Education for each course satisfactorily completed.

Complete information regarding this summer course may be obtained by writing the Institute's Department of Biology and Public Health at Cambridge, Massachusetts.

Housing in Philadelphia—Public health workers have realized for some time that housing bears a relation to health. Even though morbidity and mortality are influenced only in an indirect way, housing conditions may be considered as a fair index of the general sanitary conditions and hygienic habits of those who occupy the homes.

On the basis of an increase in population and rehousing needs, 1923 registered an increase in Philadelphia housing shortage. The number of dwellings converted to multi-family use was offset by demolitions, reducing the available housing supply. This tearing down of houses caused 988 families to seek homes elsewhere. About 75 per cent of these demolished properties had rented for less than $30 a month, and since no new buildings have been erected for years to rent at this figure, there was no alternative for those dehoused but to seek houses for the same rental in the already congested areas.

"It is a notorious fact that every year thousands of dwellings are used for multiple occupancy in direct defiance of the law. They lack adequate sanitary equipment to assure decency; rooms are subdivided after creating windowless inner rooms lacking direct light and ventilation to the outer air; basements are used for sleeping purposes. . . . No one in Philadelphia knows the death rate for such houses."

The work of the Philadelphia Housing Association suffered two losses during 1923; the Bureau of Housing in the State Department of Public Health was disbanded and all the trained personnel released; and the city council failed to ratify the zoning ordinance for West Philadelphia which had been prepared by the Zoning Commission.

Philadelphia's building program is faulty. Too much of the construction is of a costly job-lot variety, a large proportion being in the hands of small builders not accustomed to mass production. More dwellings are needed than are accessible to the industrial worker and his family, for after all, the laboring class forms the bulk of the city's population. One wonders after reading the report if Philadelphia has not lost its right to be called "the city of homes."—Bernard J. Newman, *Housing in Philadelphia*, Philadelphia Housing Association, 1923.

Minnesota's Smallpox Experience—The Minnesota law requiring vaccination was repealed in 1903. In the 21 subsequent years (1903–1923) there were 60,841 cases of smallpox with 289 deaths. In 1917 malignant smallpox was introduced into the state but strict quarantine and general vaccination effectually checked its spread. In January, 1924, malignant smallpox was again introduced and during this year 3,115 cases occurred, resulting in 307 deaths.

Of the 307 fatal cases in 1924 none had been successfully vaccinated within seven years; 47 had been successfully vaccinated over seven years ago; 243 had never been successfully vaccinated; and 17 were unable to give a definite history of vaccination.

Since compulsory vaccination is prohibited by law in Minnesota and unvaccinated persons can only be legally excluded from school when smallpox is declared epidemic, the State Board of Health adopted a resolution on November 15, 1924, declaring the disease epidemic. Local boards of health were authorized to arrange for free voluntary vaccination of all inhabitants. However, many persons did not respond to the vaccination warning issued by health officers and in January, 1925, there were 346 cases and 99 deaths throughout the state, 207 cases and 81 deaths occurring in Minneapolis alone.

"How many more people must die from smallpox before the lesson of vaccination and revaccination will be learned and practiced?"—Minnesota's Experience with Smallpox of the Malignant Type. Issued by Minnesota State Board of Health, Feb. 5, 1925.

LABORATORY

C. C. YOUNG *

Importance of Considering Lysis When Reading Agglutination Tests**—The phenomenon of bacteriolysis has been so thoroughly studied since Pfeiffer's original investigation with the cholera vibrio that one would expect more frequent reference in the literature to the necessity for considering this reaction when agglutination tests for typhoid fever are being made.

Recently the importance of this consideration was emphasized by the director of one of the county laboratories. When an outbreak of typhoid fever in his district was being investigated, it was learned that the results of serological tests did not confirm the clinical diagnoses; no agglutination being reported in the case of specimens from several patients having clinical evidence of typhoid fever. On investigation it was found that the difficulty was due to failure to recognize bacteriolysis.

It is a matter of general knowledge that lysis can occur only when both complement and specific antibody come in contact with the antigen. It is confined, therefore, to those examinations that are made fairly soon after the specimens are collected. It has been noted that usually agglutination will be found in higher dilutions of the serum than those in which the lysis occurs, but the limits of the two reactions may not vary widely.

As would be expected, there is a complete or partial clearing of the bacterial suspension when lysis takes place. Often very few organisms are seen in a hanging drop and they are usually distorted, frequently resembling cocci. Most of them have lost their motility. These survivors do not agglutinate.

In case dried blood is received for the test and lysis occurs in the dilution on which the report is based, if definite agglutination is not obtained in a higher dilution, it is necessary to report the result of the test as unsatisfactory. Specimens of serum can be inactivated at 56° C. for one-half hour. This treatment affects the agglutinins slightly, if at all.

Of the last 277 specimens of serum received in this laboratory for the agglutination test for typhoid, it was found necessary to inactivate 26, or 9.4 per cent.

These results clearly indicate the importance of considering bacteriolysis when making agglutination tests.—Ruth Gilbert, A.M., M.D., and William M. Groesbeck, B.S., Division of Laboratories and Research, New York State Department of Health, Albany.

Nouveau procédé de coloration des bacilles tuberculeux (New Procedure for Staining Tubercle Bacilli.) Stain with a solution of 1 per cent, or better, aqueous violet dahlia, this solution being phenolized to 2 per cent at boiling temperature. Decolorize with a 1:10 solution of sulphuric acid in alcohol. Contrast with a stain of "aurantia" (aqueous 0.5 per cent). The background is a golden yellow, the bacilli being violet. The Much granules, and any other isolated particles are colored. The number of bacilli per field is increased over the number found by the Ziehl-Neelson and Splenger stains, because forms which have lost or have not acquired the acid-fast properties.—Semenow, *Arch. Méd. Belges*, 77:1017 (Nov.), 1924. Abstracted therein from *Centralbl f. Baktteriol. Orig.*, p. 140, XCI, 1923. M. S. M.

Recherches sur l'étiologie de la scarletine (Researches on the Etiology of Scarlet Fever.)—The authors have duplicated the researches of Di Cristina and of Caronia and Sindoni, and have arrived at the same conclusions as these authors. In the blood, in the filtrate of nasopharyngeal mucus, and in the urine of scarlet fever patients in the eruptive stage, and in the filtrate of the squamæ, there appears regularly an organism which may be isolated and cultivated, and which possesses the characteristics of the organism described by Cristina. The

* Each month we desire to publish in the LABORATORY NOTES short, original articles, under the author's name, dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the fifteenth of each month.—C. C. YOUNG.

** Received for publication February 22, 1925.

serological reactions (agglutination and deviation of complement) are consistently positive, after the end of the eruptive stage. Inoculation of rabbits with cultivated organisms provokes a disease identical to that produced by the injection of pathological products taken from the same disease, and provokes a series of specific serological reactions. The results lead to admission of the specificity of the organism described by Di Cristina.—Nasso and Aurricchio, *Arch. Méd. Belges*, 77:1016 (Nov.), 1924. An abstract from *La Pediatria*, June 1, 1924. M. S. M.

Recherches sur l'étiologie de la rougeole (Researches on the Etiology of Measles.)—The authors have attempted to duplicate the researches of Caronia and of Sindoni and have arrived at conclusions similar to those of the authors: the organism of measles, discovered by the authors, has been found at the site of the rash and has been cultivated and found to have the characteristics described by the authors. It is still necessary to verify the serological reactions before the discoveries of the Italian school will be entirely confirmed.—Arloing and Dufour, *Arch. Méd. Belges*, 77:1017, (Nov.) 1924. Communication to the Soc. of Biology of Lyon after appearing in *La Pediatria*, May 1, 1924. M. S. M.

Brilliant Green Bile for Typhoid Stools—Excellent results were obtained in the Alabama laboratory by the use of brilliant green bile solution used for shipping specimens. The method consists of adding 15 c.c. of a 1:1500 solution of brilliant green in Difco bile to a 1 oz. bottle, sterilizing, and collecting the specimen in this solution, not more than 2 gms. to the specimen. Upon receipt at the laboratory the specimen is plated, and kept at room temperature for replating at 24 to 48 hours. More than 50 per cent recoveries from single specimens of proved typhoid cases were found in the authors' series. The method applies to paratyphoid and dysentery cases with similar results, and has been used successfully with blood and urine cultures.—Havens and Dehler, *J. Lab. & Clin. Med.*, 10:238, (Dec.) 1924. M. S. M.

Polychromization of Methylen Blue—Ultra-violet rays have been found to be very efficient in polychromizing methylen blue for Romanowsky stains. "Dissolve 1 gm. of methylen blue in 100 c.c. of a 0.5 per cent solution of sodium bicarbonate in distilled water. The mixture is exposed to the rays of any ordinary arc lamp or any other lamp capable of supplying the ultra-violet rays in appreciable quantities for from 10 to 30 minutes, depending on the amount and depth of methylen blue mixture, and also the type of lamp. A shallow dish 5 inches in diameter is to be recommended. When the mixture is cool add slowly without filtering 500 c.c. of a 0.1 per cent yellowish eosin solution until the mixture loses its blue color and becomes purplish with a metallic luster on the surface in which a fine black precipitate is formed. Filter this precipitate on paper and allow it to dry spontaneously. 0.1 gm. of this dry powder is dissolved in 60 c.c. of acetone free methyl alcohol."—Marie and Raleigh, *J. Lab. & Clin. Med.*, 10:250, (Dec.) 1924. M. S. M.

Impetigo Contagiosa in Children—In a series of 9 cases of impetigo contagiosa, hemolytic streptococci were isolated in 6 and staphylococcus aureus in 3 instances. The authors found no serological unity among the strains isolated.—Smith and Burky, *Bull. Johns Hopkins Hosp.*, 35:75, (March) 1924. C. C. Y.

Effect of Heat on Staining of Tubercle Bacillus—Specimens of sputum subjected to steam sterilization are much easier and safer to handle and give as reliable results as do raw sputa. Sputum may be sterilized as long as ten hours at an average of 8 pounds steam pressure before the organisms lose their acid-fast properties. In the presence of N/20 HCl six hours of sterilization sufficed to render the organisms no longer acid-fast. N/20 NaOH apparently did not affect the acid-fast properties of the organisms either at room temperature or in the autoclave after repeated heatings. Dry heat for 1 hour and 40 minutes at 154° C. to 156° C. did not affect the acid-fast properties of the organisms. Concentration tests may be made by liquefying sputum in the autoclave with cresolis compositus and allowing the tubercle bacilli to sediment by gravity.—Hull, Henkes, and Fry, *J. Lab. & Clin. Med.*, 10:150, (Nov.) 1924. Author's conclusions.

Mode of Transmission of Streptococci Associated with Tonsillitis—From their experimental studies the authors made the following conclusions: Aerial infection plays no part, because the causal organisms are located in a region from which they are not eliminated by this method. Furthermore, since only few and occasional hemolytic streptococci come for-

ward into the mouth at all, contamination of objects even if placed in the mouth is relatively infrequent. Expectorated hawkings seem the most probable vehicle by means of which the bacteria are discharged. Hence transmission must be by direct contact with the patient or with freshly contaminated objects. The bearings of these findings on the practical problem of isolation are obvious. Furthermore, if scarlet fever is finally shown to be caused by hemolytic streptococci as seems quite likely, the same principles will hold in this disease.—Bloomfield and Felty, *Bull. Johns Hopkins Hosp.*, 35:115, (April) 1924. C. C. Y.

Germes **anérobies dans des milieux** aérobies (Anaerobic Bacteria in Aerobic Mediums.)—The author discusses briefly the development of anaerobic organisms in aerobic mediums containing the sodium salt of pyruvic acid, following the work of Berthelot, Kayzer, and Amoureux.—De Moor, *Arch. Méd. Belges*, 77:1043 (Nov.), 1924. M. S. M.

Serum **Precipitation in Active Tuberculosis**—The technique is described and a report made on the findings of the serums examined from 233 human beings, 11 monkeys, and 2 dogs. Of the 233 human beings studied, 162 had active clinical symptoms of tuberculosis, 40 doubtful, 2 had pertussis, 1 had a pulmonary tumor, 1 had nephritis, and 5 were normal pregnant women. Cases of active tuberculosis in every case examined gave a positive sero-diagnostic reaction. A medium or strongly positive reaction was never obtained in non-tuberculous human beings. The author considers that the sero-diagnostic alcohol sodium chloride precipitation test is not specific for tuberculosis, since a positive test was obtained in other diseases, but in conjunction with accurate clinical data it is an easily performed adjunct to our present methods of examination for tuberculosis.—Felix Baum, *Am. Rev. Tub.*, 10:449, (Dec.) 1924. C. C. Y.

The Daranyi Flocculation Reaction in Pulmonary Tuberculosis—The technique of Daranyi Test (*Wien. Klin. Wchnschr.*, 35:885, 1922) as applied to 534 patients is reported. The test is of little diagnostic value in tuberculosis, but it appears to be a sensitive indicator for alterations in the colloidal stability of the serum in diseased conditions, and it gives valuable information as to the severity of the destructive process.—Max Pinner, *Am. Rev. Tub.*, 10:441 (Dec.) 1924. Author's conclusions.

Diagnostic Consideration of the Gonococcus and Other Diplococci in Chronic Urethral Infections—Microscopic findings are of no value in chronic gonorrhea due to the fact that staphylococcus varies in reactions of Gram's method of staining and in morphology.—T. O. Williamson, *Virginia M. J.*, 50:775, (Feb.) 1925. C. C. Y.

Goiter **Survey in Utah**—The Utah State Board of Health began a statewide goiter survey in 1924. At the time of the closing of schools for summer vacation, 69,256 children had been examined, representing 64 per cent of the total school population. In addition, 1,945 students at the University of Utah were examined. The area covered included ten counties in which were sixteen school districts.

Of the 69,256 grade and high school children examined, 31 per cent of the boys and 54.3 per cent of the girls, or 42.7 per cent of all students were found positive for goiter. The percentages were similar for the 1,945 students examined at the University of Utah, 31.2 per cent of the men and 56.6 per cent of the women being positive, or 42.9 per cent of all examined.

The State Board of Health has been urging the use of chocolate tablets containing 10 milligrams of iodine for prophylactic treatment in the schools. For the past two years Dr. T. B. Beatty, the State Health Commissioner, has been urging the passage of a state law prohibiting the sale of salt that does not contain a certain percentage of iodine.—"Goiter Survey in Utah," by James Wallace, M.D. Reprint from *California and Western Med.* Sept., 1924.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Deaths of Physicians in 1924—During 1924, it is estimated that 2,536 physicians died in the United States. Based on the estimate of 145,966 physicians in the United States this is equivalent to an annual death rate of 17.37 as compared with 17.95 for 1923 and 16.94, the average for the last 23 years. The age at death of the 2,448 whose age was stated varied from 22 to 99 years, the largest number of deaths at any given age occurring at 65 years. Of the 2,433 deaths for which the causes were given, diseases of the circulatory system accounted for 893, the largest number. Diseases of the respiratory system caused 248 deaths, and of these 219 were due to pneumonia. Diseases of the genito-urinary system caused 165 deaths, diseases of the digestive system 130, diseases of the nervous system 62. There were 102 deaths due to accidents, of which 55 were automobile accidents. Forty-five physicians ended their lives by suicide.—Editorial, *Jour. A. M. A.*, 84:120-21 (Jan. 10), 1924.

A Study of the 1923 Epidemic of Anterior Poliomyelitis in Kansas—During the summer and fall of 1923 there occurred throughout Kansas and its bordering states a rather severe epidemic of anterior poliomyelitis. About one-third of the 148 cases studied centered around Topeka. Fifty-five per cent of the cases occurred during July and August, and 77 per cent during July, August and September. Death occurred in 8.7 per cent of the cases. Paralysis of the entire body was noted in 56 per cent of the cases, of the lower extremities alone in 27 per cent of the cases, of the upper extremities alone in 6 per cent of the cases. It was seen that if proper treatment is carried out during the convalescent stage, from 75 to 85 per cent of the cases will show marked improvement or complete recovery, against 40 to 45 per cent of partial recovery if proper treatment is not carried out. If proper treatment is carried out during the first and second stages, fully 90 per cent of the deformed limbs and backs can be prevented. Many cases recover spontaneously without treatment, while others show signs of paralysis after one year of careful supervision.

There are definite poliomyelitis carriers. The infection is selective and may run through neighborhoods or families picking out various individuals. During an epidemic, most persons in a community doubtless have the disease in the light or abortive form, which gives immunity.—R. L. Diveley, *Jour. A. M. A.*, 84:85-86 (Jan. 10), 1925.

Rectal Pathology in the Negro—The series of cases analyzed would indicate that rectal disease in general is equally prevalent in the two races; that cancer, pruritus, fissure and spastic sphincter are less common in the Negro, and prolapsus equally common. The inflammatory conditions of the region are definitely more often seen in the Negro, as is fistula. Benign fibrous stricture occurs eleven times as often in the Negro, while hemorrhoids in the series occurred twice as often in the Caucasian race, there being apparently an excess of fibrous tissue in the hemorrhoid in the colored cases.

From the data at hand it would seem permissible to infer that the inherent tendency of the dark skinned races to fibrous tissue in excess—the fibroplastic diathesis—is in evidence in rectal pathology of the race as elsewhere.—C. Rosser, *Jour. A. M. A.*, 84:93-97 (Jan. 10), 1925.

Diabetes in Infancy and Childhood—The diabetes encountered in children is usually the most severe form. The onset is sudden, the course is rapidly progressive and death comes from diabetic coma. From October, 1922, to August, 1924, 46 patients with diabetes, aged 12 years or younger, have been admitted to the clinic. All but 5 have had insulin and there has been only one death in the group of patients treated with insulin.

Occasionally, but very infrequently, instances of benign glycosuria occur in childhood. It is

a mistake to regard a low fasting blood sugar in an early juvenile case as of any favorable significance, and a far better practice to treat all the cases as being potentially severe.

The usual cause of acidosis in well-treated diabetic children is a head cold or some other infection because of depression of the carbohydrate tolerance. Acidosis develops more quickly in children than in adults and leads more promptly to coma. Children are extremely sensitive to overdosage and develop reactions to insulin more easily than adults. Another difficulty is that we must feed an excess of calories and protein in order to provide for growth.—R. M. Wilder, *Trans. Central States Pediatric Society*, Oct. 30, 1924, ab. *Am. J. Dis. Child.*, 29:149-50 (Jan.), 1925.

Anthropometric Investigations in Scotland—The volume comprising the second and third reports of the William Ramsay Henderson Trust consists of 2 monographs by Dr. J. F. Tocher. In the first Dr. Tocher gives the results of an anthropometric survey of samples of the industrial population in northeast Scotland as regards hair and eye colors, certain cranial measurements, and stature. In this survey 1,559 adult and adolescent civilians engaged in active work were measured, and the results compared with those published in the first report of the Trust in 1905, relating to inmates of lunatic asylums in the same areas. Cranial measurements of 1,156 school children in Aberdeenshire and Glasgow are also included.

The second monograph deals with a more extensive survey of the same characters in about 8,000 soldiers in Scottish camps in 1915-1916. Dr. Tocher concludes that, though local differences in head height are of no significance, and those of head length are of doubtful import, the northeast is brachycephalic, and the south and southwest dolichocephalic, Fife and Perth being buffer counties. The northern counties are also found to be definitely superior in regard to cubical content of the head and in stature. The effect of growth on the cranial characters from the 18th year onward is shown in a series of curves, which closely resemble the growth curve for stature, reaching an adult level about the 23rd year.—J. F. Tocher, Measurements, Weights and Other Facts Relating to Man. Henderson Trust Reports II and III. Edinburgh and London, 1924, pp. 172, ab. *Brit. M. J.*, 2:1125 (Dec. 13), 1924.

Inherited Syphilis and Tuberculosis—One hundred children were given a routine serological examination as they were admitted to the Fife and Kinross sanatorium, to determine (1) the incidence of inherited syphilis among 100 tuberculous children (2) how far syphilis predisposes to the superadded infection with tubercle bacilli and (3) how far the conditions could be modified by anti-syphilitic remedies. The incidence of inherited syphilis was 11 per cent. Other writers have put the incidence of inherited syphilis in the general child population as 10 per cent, 10.8 per cent and 3.3 per cent. The fact that 11 per cent is so little higher than the percentages obtained by these authors does not allow one to more than state that, considering the method of spread of both diseases to be the same, there might be some slight influence favorable to the implantation of tuberculosis on a syphilitic terrain. It was found that anti-syphilitic remedies must be used with great caution.—W. T. Munro, *Lancet*, 2:1173-1176 (Dec. 6), 1924.

Mortality from Alcoholism, 1923—Deaths from alcoholism in the United States are mounting rapidly and figures from the Census Bureau show that the death rate from this cause in 1923 was larger than for any year since 1917. The rate for 1923 was 3.2 per 100,000 as compared with 2.6 in 1922, 1.8 in 1921, and 1.0 in 1920. In pre-Volstead days the death rate ran from 4.4 to 5.8. Connecticut, New York, New Jersey, Massachusetts, Pennsylvania, Rhode Island and Wisconsin all showed large increases. In Wyoming the rate jumped from 3.9 in 1922 to 8.0 in 1923. The states which showed a decline in alcoholism were Colorado, Delaware, Florida, Indiana, Kansas, Maine, North Carolina and Oregon. Cirrhosis of the liver declined slightly, from 7.5 in 1922 to 7.2 in 1923. Bureau of Commerce, Washington, D. C.

Health Summary for Dayton, Ohio, 1924—The death rate for Dayton, Ohio, in 1924, 10.8, is the lowest ever recorded. In 1921 and 1922 the rate was 10.9, the lowest previous record. The infant mortality rate of 72.1 is, with the exception of a rate of 67.5 in 1922, the lowest recorded in Dayton. The diseases which showed an increased number of deaths as compared with 1923 were cancer, diphtheria, infantile paralysis, organic heart disease, accidents, suicide and apoplexy. Influenza, pneu-

monia and tuberculosis were the diseases which showed the most marked decreases in number of deaths, although many others showed small decreases.—*Dayton Health Bull.*, Jan. 15, 1925.

Vital Statistics in San Diego, Calif., 1924—The birth rate in San Diego for 1924 was 23.1 as compared with the 1923 rate of 22.9. The favorable infant mortality rate of 59 for 1923 was even better in 1924, 54.7. The death rate was 17.2 including non-residents; if these are excluded the death rate becomes 13.4. The total death rate in 1923 was 16.7. There were reported to the police department 777 personal injuries resulting from automobile accidents as against 498 in 1923. The death rate from automobile accidents was 24.9 in 1924 as compared with 20.7 in 1923.—*San Diego Month. Bull.*, Dec., 1924.

Health Conditions in Baltimore, 1924—During 1924 the Negro death rate for the city of Baltimore (22.60 per 1,000) was almost double that for the white population (12.75) according to the report of the city health department. For the same period the Negro birth rate was 28.13 per 1,000 and that for the white population was 22.06. There were 90 suicides, 76 homicides, and 664 deaths due to injuries received in accidents.—*Jour. A. M. A.*, 84:209 (Jan. 17), 1925.

Health in Boston, 1924—The death rate in Boston in 1924 (14.08) was lower than the rates for 1923 and 1922 (14.93 and 14.95). It is encouraging to note that deaths from pulmonary tuberculosis declined from 677 to 667 in 1924, and deaths from heart diseases from 1,880 in 1923 to 1,740 in 1924. Other diseases which showed a decrease in deaths as compared with 1923 were measles, scarlet fever, whooping cough, diphtheria, influenza, pneumonia, nephritis and external causes. On the other hand, deaths from cancer, cerebral hemorrhage, alcoholism and diarrhoea and enteritis under 2 years showed an increase. The birth rate was 25.36 as compared with 24.69 in 1923 and the infant mortality rate 73.86 as compared with 82.3 in 1923. The puerperal death rate was 7.1, while that for 1923 was 7.0 and that for 1922, 8.1.—*Boston M. and S. J.*, 192:190-191 (Jan. 22), 1925.

Health Conditions in Syracuse, 1924—The health record for Syracuse, N. Y., was decidedly good for 1924. The general death rate of 12 is the lowest ever recorded, the 1921 rate of 12.2 being the most favorable the city had had prior to 1924. The infant mortality rate had never been below 82, while the 1924 rate was 69.6. The mortality from diphtheria (9.0 per 100,000) and that from tuberculosis were also the lowest the city has ever known. Cancer, however, is increasing, the 1924 rate being higher than any for the past 10 years.—*Syracuse Weekly Bull.*, Jan. 10, 1925.

Infant Welfare in New Zealand—New Zealand can lay claim to the lowest infant mortality in the world, namely 43.8. At the same time the birth rate reaches the comparatively high figure of 21.54, showing that a high birth rate and a high infant mortality rate are not necessarily connected. For the city of Dunedin there have been no deaths from diarrhoea in the last two years. For the whole country the first month mortality has remained practically stationary in the neighborhood of 30 per 1,000 live births for the past 15 years or more. There is also a relatively high number of stillbirths (32 per 1,000 live births in 1923) and a high maternal mortality rate of 5.1 per 1,000 births.—*Med. Off.*, 33:3 (Jan. 3), 1925.

Improved Health Conditions of Mauritius—In 1921, Dr. Andrew Balfour reported that between 3,000 and 4,000 persons in Mauritius were falling victims to malaria every year. The death rate of children under 5 in 1918 was over 300 per 1,000 births. Dysentery and enteric fever were rife throughout the island. Sanitation and cleanliness were lacking everywhere.

A report submitted in January, 1924, shows that a levy on the sugar industry provided funds for reclaiming and canalizing land, and reforming the water supply and drainage systems. Strenuous efforts to improve the sanitation of Port Louis began in earnest in September, 1921. The mortality fell from 2,703 in 1921 to 1,738 in 1923 out of a population of about 50,000. Malaria fell from 333 deaths in 1921 to 169 in 1923. The death rate of the whole colony of Mauritius in 1923, 28.5 per 1,000, is the lowest since 1891, and for Port Louis the rate, 34.1 per 1,000, is the lowest since 1880 (33.5 per 1,000).—*Lancet*, 2:1244 (Dec. 13), 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Calculating **the Cost of Waste Collection**—The method of calculating the cost of collection of garbage and ashes and transporting them to the dump, incinerator or other type of disposal plant is carefully outlined and illustrated by two examples.—H. W. Howard, *Am. City*, 32:128 (Feb.), 1925. A. W. B.

Activated **Sludge Treatment, Lodi, California**—The plant consists of four aerating tanks, two clarifying tanks with return channels for re-aeration of sludge which settles in the bottom of the clarifiers, a chlorination tank and a chemical laboratory. The plant which cost about $130,000 provided for double the present population.—L. F. Barzellotti, *Am. City*, 32:137 (Feb.), 1925. A. W. B.

What is a **Sanitary Drinking Fountain?**—In order that the public may better understand what type of drinking fountain will not endanger public health, the final report of the committee on sanitary drinking fountains of the American Water Works Association is published. The types of fountains recommended are those having the angle jet, the protected orifice and sanitary guards.—*Am. City*, 32:183 (Feb.), 1925. A. W. B.

Common **Colds and Chlorine Treatment**—Preliminary work in the treatment of common colds by chlorine has revealed great possibilities of supplying prophylactic and curative treatment for respiratory infections. Lack of proper equipment has caused many failures, but in the hands of a trained, experienced sanitarian good results have been achieved.—New Jersey *Pub. Health News*, 10:39 (Jan.-Feb.), 1925. A. W. B.

Recent **Development in the Treatment of Certain Respiratory Diseases with Chlorine** Inhalation—Effectiveness of chlorine treatment has been found to be limited to a concentration of between 0.014 and 0.016 mg. per liter for one hour. Thus far the crude type of apparatus has limited the effectiveness of the treatment to its application by experts. A new inhalator convenient for use by physicians shows, of 1,029 cases of respiratory diseases treated with chlorine, 656 or 64 per cent cured, 312 or 30 per cent improved, and 51 or 6 per cent unchanged. The development of adequate equipment for use in hospitals, schools, etc., will from present indications be of great prophylactic value.—Edward B. Vedder, New Jersey *Public Health News*, 10:40 (Jan.-Feb.), 1925. A. W. B.

Preliminary Report of Chlorine Inhalation Treatment—New Jersey State Department of Health has offered chlorine gas inhalation treatment to state employes suffering from common colds or other respiratory infections. From the cases treated a preliminary report shows the duration of colds to have been reduced materially, except where the cold was of some days' duration and had reached the chest, when the treatment was not so regularly beneficial. Apparently the more chronic the cold the less likely the benefit from inhalation of chlorine.—New Jersey *Public Health News*, 10:45 (Jan.-Feb.), 1925. A. W. B.

Water Supply and Sewage Disposal in the Ruhr Valley—The drinking water supply of 3,500,000 of inhabitants is drawn from River Ruhr, in the valleys of which are located 90 different water works. Water is taken from wells and infiltration galleries and is of excellent quality. At times of low water the river bottom is frequently covered with sewage sludge to such an extent that no water can pass to the filter galleries. During this low period filter basins fed by river water are used.—Dr. Karl Imhoff, *Eng. News-Rec.*, 94:105 (Jan. 15), 1925. A. W. B.

New Ozone Plant Purifies Air in Central London Railway Tube—The line is made up of two separate tunnels, aggregating about 20 miles, and interconnected at several points by

crossovers. In the ozone system of ventilation now installed the air supply is drawn from as clean a source as possible and filtered to remove sulphurous gases, smuts and solid matter. The cleaned air is then passed into a mixing chamber where it is mixed with a small amount of ozone, whence it is distributed through ducts to the various parts of the tunnels.—*Eng. News-Rec.*, 94:321 (Feb. 19), 1925. A. W. B.

The Respective Influences of Temperature and Moisture upon the Survival of Rat Flea (Xenopsylla Cheopis) Away from Its Host—A rapid fall in the number of plague cases with the onset of hot weather is a characteristic feature of plague epidemics in the northern half of India. Experiments were conducted, keeping saturation deficiency constant while temperature varied, and keeping temperature constant while saturation deficiency was varied. Conclusions: Survival of fleas (X. cheopis) apart from host is approximately in inverse proportion to saturation deficiency of the air, provided the temperature and air movement are constant; under similar conditions but with constant saturation deficiency their length of life is reduced to between one-half and two-thirds by 10° C. rise in temperature. Variation in saturation deficiency of 5 mm. to 35 mm. such as occurs in the plains of northern India at different seasons would accordingly shorten the average duration of life of wandering rat fleas in proportion of 15 to 1.—A. W. Bacot and C. J. Martin, *J. Hygiene*, 23:98 (Sept.), 1924. A. W. B.

The Bacteriological Examinations of the Feces in Four Cases of Typhoid Fever, Made at Frequent Intervals for a Period of One Month—Investigations described were designed in order to observe whether changes in the diet of patients suffering from typhoid fever were accompanied by any changes in the fecal flora, and to observe whether pyrexia, diarrhea or constipation occurring during the course of the disease altered the numbers of typhoid bacilli in the feces.

Results of investigation: Appearance of B. typhosus in the feces indicated no relation to changes in diet or treatment; the later in the disease that the bacilli appeared, the shorter the duration of their appearance; on disappearance of typhoid bacilli from stools the intestinal flora tended to become more simple; B. coli was the only organism invariably present at every examination; streptococci were more abundant in earlier stages, when milk formed the greater part of the diet; in two cases where boils occurred on the body the causative organism had previously been isolated in large numbers from the feces; there is no apparent advantage in giving a high carbohydrate diet except in cases of marked alkalinity and putrefaction.—Leonard P. Lockhart, *J. Hygiene*, 23:106 (Sept.), 1924. A. W. B.

The Influence of Weather Conditions on the Mortality from Bronchitis and Pneumonia in Children—Investigation of the incidence of the two diseases were confined to children under 5 years of age in London, Glasgow, Edinburgh, Aberdeen, and Dundee. The prevailing temperature seems to exercise the greatest influence in predisposing to an increased mortality from, and presumably an increased incidence of, bronchitis in children in the cities. Mortality is most intimately related to the mean temperature of the preceding week and is, on the average, as closely related to the temperature of two weeks before as it is to the corresponding week. The lower the mean temperature the greater the fatality from bronchitis. The mortalities from bronchitis, pneumonia and respiratory diseases are inversely associated with the mean annual temperature in the corresponding counties of England and Wales. The mortalities from bronchitis and pneumonia are not influenced in any consistent manner or degree by the amount of rainfall. There is some evidence that a high relative humidity, associated with a low temperature has some influence in predisposing to an increased mortality from the respiratory diseases.—Matthew Young, *J. Hygiene*, 23:151 (Nov.), 1924. A. W. B.

INDUSTRIAL HYGIENE

DRS. E. R. HAYHURST AND N. C. DYSART

FUNDAMENTALS OF VENTILATION

Editorial **Foreword**—The editors of this section of the JOURNAL have arranged a short "Comment and Symposium" on ventilation which we believe progress calls for at this time.

Leonard Hill of the British Medical Research Council published "The Science of Ventilation and Open Air Treatment" (Reports Nos. 32 and 52) in 1920, which may be taken as giving the point of view of the applied physiologist.

The Report of the New York State Commission on Ventilation deals almost exclusively with schoolhouse ventilation, but there are so many principles concerned which are directly applicable to factory and workplace ventilation, including mercantile establishments, offices, etc., that we devote much of our space to a résumé of some of its findings. We also present some other concepts of the present day question of proper ventilation. The work of the New York Commission was founded by the Milbank Memorial Fund, established and endowed by Mrs. Elizabeth Milbank Anderson. The members of the Commission were C.-E. A. Winslow (Chairman), D. D. Kimball, Frederic S. Lee, James Alexander Miller, Earle B. Phelps, Edward Lee Thorndike, George T. Palmer (Chief of Investigating Staff), and Joseph Herzstein (Secretary).

The vast majority of workers, both men and women, in the United States are employed in small places where a first-class ventilation, as provided for in the ordinary schoolroom, would be ideal. Those in larger buildings would of course be subject to more elaborate ventilation schemes.

Winslow has summarized the chief features of ventilation, particularly for schoolhouses, in his chapter on the subject in Park's "Public Health and Hygiene." Hayhurst has drawn up, in a 2½ page statement, the "Suggested Standards for Ventilation in Work Places and Tests Therefor," in Kober and Hayhurst's "Industrial Health." These standards have been reprinted in "Ohio's Health" (Ohio State Dept. of Health, Columbus), in the April-May-June issue, 1924, which is available for free distribution. Parkes and Kenwood devote many pages to the subject in their book "Hygiene and Public Health."** These constitute our sources of information for the abstracts which follow.

The object of ventilation is the maintenance of healthful atmospheric conditions. The conditions seem to be satisfied by the term "a quiet coolness," *i.e.*, for sedentary persons. Apparently, in the usual quarters, diffusion alone will take care of the oxygen and carbon dioxide question as well as body odors and perhaps body heat, but in crowded quarters (less than 250 cu. ft. per person), body heat and body odors will not be removed effectively, and these compose the bone of contention in modern concepts of ventilation requirements. Only the first of these, body heat, appears to affect health directly, and does this in at least one way, *i.e.*, by predisposing to respiratory diseases. Window ventilation will take care of the situation, as a rule, where there is no crowding, and more particularly window ventilation with provision for exhaust draft in the room will do so. The question of the use of ozone as a deodorant and air purifier was presented in the August, 1924, issue of THE AMERICAN JOURNAL OF PUBLIC HEALTH, p. 722.

Where fires or stoves are burning in rooms the oxygen consumption may be enough to constitute a serious hazard, while the addition of combustion products, poisonous gases, dusts, and fumes obviously calls for extra means of ventilation. These special cases are left out of the symposium which we have arranged below.—E. R. H. and N. C. D.

* The editors of this Section will gladly receive contributions from members. Please address all material to Hartman-Ohio Bldg., Columbus, Ohio.

** Any of the books mentioned in this Section may be obtained through the Book Service of the A.P.H.A., 370 Seventh Avenue, New York City.

Window Ventilation—The following features concerning window ventilation are taken from the Report of the New York State Commission on Ventilation. When window inlets with gravity exhaust are provided for a schoolroom and compared to plenum (fan) ventilation there is less complete aeration (which appears satisfactory), the carbon dioxide values are somewhat higher (which has no apparent significance) while the air change is materially less than the usual standard of 30 cubic feet per person per minute (which appears to have advantages). The *distinct advantages* of the window ventilation method may be detailed as follows: (1) The air flows across the top of the room from the center to the inner wall, with no strong current in the zone of occupancy. (2) No offensive odors, also less stuffy than the plenum method. (3) The air seems comfortable and is preferred. (4) The health of school children showed 18 per cent less absences and 70 per cent less illness from respiratory diseases. (5) A temperature of 68°F., called the *critical temperature*, can be maintained with general approval of those present. (6) Desirable fluctuation is continuous though slight. (7) It gives a desirable stimulus of coolness and more stimulation to the vaso-motor system. (8) "Less drafty and yet more breezy." (9) It gives a greater difference in temperature between the floor level and the 3 ft. level which is probably more agreeable. (10) The heat loss by radiation and conduction is greater while that by convection is less. (11) The nose and throat are bathed in cooler air. (12) The heat loss from the clothed body is greater. (13) There is less air flow and at lower temperatures. (14) There is a gentle mixture of cool and warm air. (15) The cost is less as illustrated by the use of only 7 tons of coal in the Sherman School (Fairfield, Conn.) as compared to the use of 10 tons of coal in a Bridgeport (Conn.) school having the fan ventilation method. In short, it seems the best form of ventilation for the average classroom.

The *disadvantages* are summed up as follows: (1) Street noise is greater. (2) Street odors, dirt and dust are greater provided proximity to such streets is a feature. (3) The room should not be overcrowded. (4) The method is not adaptable to inner rooms and certain odd plans of building construction. (5) It is not as well adapted for auditoria and factories where fan ventilation is usually necessary. (6) It is not the best form of ventilation for hospital wards where window inlets only (without gravity exhausts) are wanted.

The *conditions* for window ventilation with gravity exhaust are summarized as follows: (1) Radiators are to be located beneath the windows and extending the full width of same. These radiators should be equipped with intermediate-acting thermostats or modulating hand-controlled valves placed at the top of the supply end of the radiator. Radiator shields should be set up to protect persons seated nearby from the direct effects of heat from the radiators. Vapor or vacuum heating systems should be used. (2) Window boards or deflectors should be provided at the bottom of the window. The windows should open from the bottom and not from the top. Of the several forms of deflectors investigated the "A type" or those with multiple curved vanes which continuously receive and increasingly project the incoming cool air currents upward as the window is raised was found to be the one preferred. (3) Window shades (when necessary) should be two in number for each window and attached midway to the window frame between the top and bottom of the window. The top shade is to be pulled upward, the lower one downward. The shades should be guided by cords and pulleys to prevent rattling by incoming air. (4) The exhaust ducts should have an area of 8 sq. ft. for the ordinary sized schoolroom and should be located high up on the wall opposite the windows. They should be provided with dampers to meet varying weather conditions. These ducts should pass up inner walls of the building to avoid chilling. An aspirating cowl should cover the opening of the duct on the roof while a heating coil may perhaps be found necessary in the duct (to stimulate chimney action). (5) The room should not be overcrowded. For a second grade room (having 39 pupils) 250 cu. ft. per capita is sufficient; for a sixth grade room (having 31 pupils) 310 cu. ft. per capita is sufficient. (6) A large thermometer with "68°F." clearly indicated as a danger point should be displayed in a prominent position on the teacher's desk.—Report of the New York State Commission on Ventilation, pp. 521, 525, 528 (1923).

Fan Ventilation—The New York State Commission on Ventilation considers fan or plenum ventilation with gravity exhaust the

second best method for schoolhouse ventilation. The investigation showed the following *advantages*: (1) Aeration good. (2) Carbon dioxide less (but of no importance). (3) Curtails outside noise, dust and odors. (4) Overcrowding can be taken care of.

The *disadvantages* found were as follows: (1) Uniform temperature. (2) Necessary to have 70°F. to be comfortable. (3) Dry air (where humidification is not used). (4) The air supply not fresh (having passed through warming chambers, etc.). (5) There is usually a floor draft in the zone of occupancy (this draft takes an opposite direction to the ceiling air). (6) There is a rapidly moving current of warm air, *i.e.*, too much air flow. (7) 30 cu. ft. per minute per capita is excessive. (8) There is a *rapid* mixing instead of *gentle* mixing of warm and cool airs in the room. (9) The required temperature (70°F.) is above the critical temperature (68°F.) for (a) comfort and (b) for reduction of respiratory diseases. (10) The method is unfavorable when windows are also used. And (11) the cost of installation and operation exceeds that of window inlets with gravity exhaust.

The *conditions* necessary are as follows: (1) The usual standards could be followed as in best modern ventilation practice for fans, motor capacity, duct areas, and register area. (2) Each room should have its own individual duct from heating chambers. (3) The heating chambers should be constructed with (a) hot air and (b) tempered air chambers. The individual duct to each room should connect with each of these chambers at a point located just outside of the chambers. (4) Mixing dampers should be placed at the junction of the two chamber ducts with a thermostatic control for each duct. (5) Each room duct should have a volume damper to control the quantity of air introduced. (6) Windows should be permitted to be opened in different rooms without serious effect on the whole system. (7) The incoming air to the room should be moderately low tempered. (8) Direct radiation should also be present in each room under both thermostatic and hand control. (9) The plenum air should be introduced 8 ft. above the floor on an end wall (next to window wall) to avoid draft. (10) Exhaust outlet is best placed near floor on opposite end of the same wall. (11) The exhaust outlets or ducts should be ample, controlled by volume dampers and shut-off dampers, also with aspirating cowls or ventilators on the roof openings. Where exhaust fans are also used, the above conditions equally apply. (12) A thermometer plainly marked "70°F." should be displayed on the teacher's desk.—Report of the New York State Commission on Ventilation, pp. 522, 525, 527 (1923).

To the above, the features presented by Parkes and Kenwood in their volume on "Hygiene and Public Health," should be added as expressing the English viewpoint for plenum systems: The rate of air flow in the main conduit should not exceed 5 ft. per second, and at the room inlet 1½-2 ft. per second. Outlet conduits if on same side as inlets should be low down on the wall, but if on opposite or right angle walls should be high up. Inlets should provide 24 sq. in. per capita. They should be placed high up and larger than outlets in order to lessen drafts, but smaller than outlets if the room, windows, etc., are of loose construction, permitting other "in-leaks."

The plenum system is *useful* for auditoria, restaurants, and schoolrooms; for large audiences for limited periods; and for all places where 250 cu. ft. per capita or less obtains. The incoming air should not be warmer than 60°F. on entrance. The *advantages* of the plenum system are: Regulation of amount and rate, desirable source, the air may be warmed, cooled, sprayed, filtered, and renewed at will, also a central air conditioning spot provides for many rooms.

The *disadvantages* are that the air has lost its freshness which brings about lassitude, depression, and loss of tonic properties. There is a constant tendency to overheat, giving an uncomfortable dry sensation. Uniformity and monotony are present. Closing the windows is a bad object lesson in view of modern preachments of the advantages of fresh air. The plenum system is difficult to install in old premises while local heat in the room is also necessary.—Parkes and Kenwood, Public Health and Hygiene, pp. 210, 212, 220 (1923).

Air Replacement Rates in Ventilation—It is striking that the Report of the New York Commission on Ventilation says practically nothing concerning air replacement rates which is such a major factor at the present day in ventilation practice, yet it appears that the question is really of insignificant importance since it has been proved that air conditioning is "a question of physics rather than chemistry" and that only enough change is necessary to remove the odors and heat produced by

room occupants in the usual premises, leaving the laws governing simple diffusion of gases to take care of the question of oxygen and carbon dioxide.

Parkes and Kenwood's statements may again be taken as representing the English opinion and we abstract points as follows: (1) Dirty bodies yield "faint stuffiness" when the air change is less than 3,000 cu. ft. of fresh air per capita per hour based on Professor De Chaumont's findings of years ago. This amount of air change keeps carbon dioxide at 0.2 per 1,000 cu. ft. (or 0.6, allowing for 0.4 as constant in the air). Kenwood found that for senior classes in schools there was rarely a faint odor or stuffiness if carbon dioxide equalled 0.3 per 1,000 cu. ft. (equivalent to an air change of only 2,000 cu. ft. per capita per hour). He also found that temperature and humidity could still be maintained satisfactorily and that work rooms were equivalent to schoolrooms in these respects. The English regulations set cu. ft. per person as low as 80, with only 8 sq. ft. necessary for schools, yet such apparent overcrowding produces no carbon dioxide hazard. They point out that small spaces require much draft to ventilate efficiently. (But this is different from a limited cubic space per person in a large room.) Furthermore, height of ceiling does not necessarily mean corresponding dilution of products of respiration, because such products may tend to stratify in the lower levels of the room.

Where 1,000 cu. ft. per person is present, three changes per hour of outside unwarmed air as in the winter time is all that can be borne. The entering air speed in a duct must not exceed 5 ft. per second (equivalent to 24 sq. in. of inlet opening for each individual) while a velocity of 2 to 3 ft. per second is agreeable. Where the inlet air is warmed, the amount of cubic space may be diminished, but for a person at rest ½ to 1 ft. per second is the toleration velocity for temperatures ranging from 60° to 70° respectively. The authors point out that in a *natural ventilation*, outside air entering at the rate of 3 ft. per second (less than 2 miles per hour) with windows on opposite sides of the room may permit as much as 100 renewals per hour. The inlet for outside unheated air should be 5 ft. above the floor with the outlet at the highest part of the room. Always direct cold air upward to avoid drafts. If the air is heated at the point of entrance it should enter the room low, just above the floor.—Parkes and Kenwood, "Hygiene and Public Health," (1923), pp. 194–197.

Recirculation in Ventilation—Parkes and Kenwood comment very little upon this and refer to American experience as leading the thought on the matter. The New York Commission on Ventilation found the following *advantages* in recirculating (a part of) the air used in a room: (1) Carbon dioxide was only 1-2 parts per 10,000 higher. (2) The physical development (40 children observed for 14 weeks) was slightly greater than children in fresh air rooms. (3) The mental progress was distinctly better. (4) "No appreciable harmful influence." (5) "No danger to health." (6) "Save about half of the fuel." (7) Satisfactory in cold dry climate with loose building construction. (8) No air washing necessary if there is no crowding. (9) Satisfactory for dwelling houses and oftentimes for gymnasia and theaters (as seen in actual practice).

The *disadvantages* were on the esthetic side and consisted of the following: (1) An odor prevailed which was disliked by teachers especially. (2) Air washing was required if there was any overcrowding and the accompanying humidification made matters worse. (3) Humidification of 30-50 per cent accentuated odors. (4) Body odors were not freed by air washing. (5) "Ozone made matters worse." (6) A constant supervision by an engineer was necessary. (7) Supervision by a janitor alone would undoubtedly be very serious.—Report of the New York State Commission on Ventilation, pp. 503, 505, 517, 524.

FOOD AND DRUGS

HARRY W. REDFIELD, PH.D.*

The **Sensitization of the Organism to Deficient Diets** (trans. title)—To determine whether animals which have recovered clinically and anatomically (macroscopically) from deficiency diseases are immunized or sensitized to a second deficiency of the same type, a series of guinea pigs was kept for 24 days on a vitamin C deficient diet, at which time all showed typical scorbutic lesions. They were then kept on a complete diet for from 10 to 20 days or until complete recovery had taken place, after which they were again placed on the deficient diet. At the same time control guinea pigs which had been maintained on a complete diet were also given the scorbutic diet. Among the latter animals the first signs of scurvy did not appear until about the fifteenth day, while in the others, previously cured of scurvy, the symptoms appeared in from two to five days. The survival period of these animals was also much shorter than of those suffering from scurvy for the first time. The cause of the increased sensitivity to the effects of the scorbutic diet is thought to be the persistence in the bone marrow of a fibrillar condition which was the only abnormal appearance of the bony tissue of the animals recovered from scurvy.—G. Mouriquand, P. Michel, and Bernheim, *Compt. Rend. Acad. d. Sci.* (Paris), 178 (1924), No. 13, pp. 1098, 1099.

Potent **Drugs**—Every health officer should consider it one of his important functions to see to it, through causing analyses of samples and legal actions when necessary, that the potent drugs dispensed in his jurisdiction are of the strength claimed, neither materially stronger nor weaker in the active ingredients. Moreover, because of the growing tendency that has been noted for physicians to largely take out of the hands of the health officers the control of these drugs by dispensing the products of concerns in which they may or may not be shareholders, it becomes the physicians' duty to take such precautions as may be necessary to assure themselves that these drugs are of the declared strength.

It is easy to conceive how through inefficient mixing of the ingredients for hypodermic tablets a portion of the resulting tablets might be entirely too strong while the remainder would be too weak. It is also easy to understand how through human errors in the mixing room, manufacturing losses or criminal diversion of alkaloids into illegitimate but profitable channels, entire batches of alkaloidal tablets might be markedly deficient in active ingredients. There is grave danger in such a situation. The physician is very apt, after frequent use of a product of deficient strength to increase his doses to such an extent that when he gets a properly manufactured preparation, the health or possibly the life of his patient may be jeopardized through an overdose. In considering what precautions should be taken, the thought will naturally come that it is obviously much safer to deal only with concerns of high standing which maintain adequate chemical control in their factories with analysis of all finished products, than to deal with concerns which maintain little or no control other than calculating the amount of product which should be obtained from a weighed amount of unanalyzed raw material.

In this connection, the following excerpts from the published annual report of the Chief of the United States Bureau of Chemistry to the Secretary of Agriculture, dated September 15, 1924, are of much importance:

"During the year analyses have been made of approximately 700 samples of the more important medicinal tablets including tablets of strychnine sulphate, quinine sulphate, nitroglycerine, morphine sulphate, heroin hydrochloride, codeine sulphate, atropine sulphate, aspirin and acetphenetidin, which are labeled to show their purported content of active ingredients. . . . This investigation has shown that while most of the products comply reasonably well with their declared standards, many need improvement. In some in-

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stances the variations were so great that prosecutions are being instituted against manufacturers. . . . An exhaustive survey of some official and unofficial galenicals was made. . . . The products examined include tincture of belladonna leaves, fluid extract of belladonna leaves, tincture of belladonna root, fluid extract of belladonna root, fluid extract of colchicum seed, tincture of colchicum seed, fluid extract of colchicum corm, powdered extract of colchicum corm, wine of colchicum corm, wine of colchicum seed, colchicine, fluid extract of nux vomica, tincture of nux vomica, powdered extract of nux vomica, fluid extract of ipecac, tincture of aconite, tincture of digitalis, etc. The products investigated are highly important drugs, used principally in filling physicians' prescriptions. Many of the samples examined varied materially from the official or declared standards of strength, showing the necessity for an exhaustive investigation."

PRESS NOTICES

The press during the past month has carried a number of items of so much interest to the readers of this JOURNAL that quotations from them deserve a place in our columns.

Opium Conference—On February 19 the International Opium Conference adjourned *sine die* after Australia, Belgium, Great Britain, Greece, Japan, Luxembourg, the Netherlands, Persia, Portugal and Siam had affixed their signatures to all three instruments adopted by the conference, the anti-narcotic convention proper, the protocol and the final act. Bolivia and Hungary merely subscribed to the final act. President Zahle's closing address was largely devoted to the withdrawal of the United States from the conference, which he regretted, but he declared the Americans' "boldness, directness and devotion gave supreme impetus to the whole anti-drug campaign."

On February 23, the New York Herald-Tribune published the following interesting editorial regarding the matter:

"The opium convention, after the longest and most exhausting conference in the League's history, has at last got itself signed. In its final form it will not suppress either the opium traffic or the drug evil. It might even be used to perpetuate them if public opinion were lulled into a sufficient state of somnolence, but after the spectacular efforts of the American delegation it is unlikely that this will happen, and the convention can offer a basis for the final conquest of the opium scourge.

"The Hague convention of 1912 provided for the control of raw opium production, the 'effective' suppression of the manufacture and use of prepared opium and the prevention of smuggling. Twelve years later none of these things had been done. Under the general provisions of the 1912 instrument they might never have been done. American representatives believed that they would never be done unless a definite and specific undertaking to do them were entered into. They prepared such a program, opened the way for its consideration through the preliminary conferences, and took it into the Geneva meeting. It was in theory a plan to render the Hague convention effective, but in fact it was an entirely new approach to the opium problem.

"The nations with large economic interests in the production of opium preferred to stick to the older method of generalities. Between our proposals and those of the British, French and other delegates there was not merely a difference in degree, but a difference in principle. Our proposals lost, and Mr. Porter quite properly refused to sign a convention which represents a very different approach to the subject. He took the shrewder course of giving our ideas the maximum of advertisement by withdrawing from the conference. It was not 'sour grapes,' but statesmanship. The American plan will not now be forgotten; the nations which turned it down will be required to justify their further action, and in the end the method of temporizing will have to yield to a genuine attack upon the problem.

"The present convention supplies a much better machinery for such an attack than any now in existence. It sets up the international board of control, it provides for the collection of statistics, it recognizes the principle of the limitation to medicinal and scientific needs and it provides for the suppression of opium smoking within fifteen years after smuggling shall have ceased. As with other clauses, this latter might be made to mean nothing; on the other hand, it might be made to mean everything. The convention alone might have been a small gain, but the convention plus the American insistence on real suppression will probably be a considerable gain. Since he could not carry the American plan, Mr. Porter, by withdrawing, has done

more for the anti-opium cause than he could have done in any other way."

Poison Labels—Too free a use of poison labels may result in the public ignoring them as danger signals was the conclusion reached by the National Drug Trade Conference, for the reason that promiscuous placing of these labels on all substances capable of acting as poisons in excessive doses, when they are not poisonous in ordinary circumstances, has the effect of cheapening the warning value of all labels.

"There is no known substance, it was declared, so innocuous that it may not react dangerously in excessive doses or when improperly administered. Even common table salt was reported as poisonous to some of the lower animals, and as having even caused the death of human beings when accidentally taken in excessive doses, so that it has frequently been used as the means of committing suicide.

"Rhubarb when eaten in excess has been known to act as a powerful poison on account of its natural content of oxalic acid, and many of the ordinary articles of the kitchen cabinet, such as spices, condiments and various flavoring substances, which, though perfectly harmless, as ordinarily used, are capable of acting as violent poisons in overdoses."

The phraseology of bills being introduced into various legislative bodies to amend or extend poison laws was characterized as either faulty or indefinite. It has been found impossible, it was said, to provide a definition for poisons that will not either include many substances harmless under ordinary conditions or exclude other substances that are sometimes capable of operating dangerously.

"Every substance intended to be covered by an act should be specifically set out by name and title therein instead of attempting to cover by uncertain and misleading definitions," it was urged. "The use in legislative enactment of such general descriptive phrases as 'all other poisons,' or 'all other substances of similar or equivalent properties,' is highly objectionable both from a scientific and from a practical standpoint."

New Anesthetic—A new anesthetic, which ultimately may result in the abandonment of cocaine for this purpose, has been discovered by Dr. Schulemann, German scientist, it was announced by the American Chemical Society.

The new compound, known as tutokain, is said to have been discovered among the intermediate products in the manufacture of artificial rubber. Unlike cocaine, it is non-poisonous in practical use, it is said, and can be sterilized without decomposition.

"Cocaine," according to the society's report, "is so much in demand in Germany today that because of its habit-forming properties, attempts are being made to discontinue its use and gradually forbid its manufacture and traffic."

Cancer Abated by Insulin.—A press dispatch from Vienna dated February 28 says that, "Successful use of insulin in preventing the recurrence of cancer in mice is reported in a paper read by Professor Friedrich Silberstein, of the Vienna Institute of Experimental Pathology, before the Medical Association.

Professor Silberstein described how he had verified by countless experiments on mice that, when they were treated with maximum supportable doses of insulin after the excision of their carcinoma, no relapse of the malady was observable in 50 per cent of the cases. He stated also that the development of cancerous growth slowed down or ceased entirely on continued treatment with maximum doses of insulin for mice not operated upon."

Antiseptic Fifty Times Stronger than Carbolic Is Safe to Drink—From Baltimore under date of February 10, the following startling statement issued: "The discovery of a new antiseptic, used recently in Johns Hopkins Hospital to clear up long-standing infections of the kidneys and of the urinary tract, was elaborated upon at the Johns Hopkins School of Hygiene and Public Health to-day, following a preliminary announcement of the discovery by a medical journal.

"The new antiseptic, named hexylresorcinol, is said to be fifty times as strong as carbolic acid in its power to kill disease germs, and yet so harmless to man that it may be swallowed without injury.

"Dr. Veader Leonard, chairman of the clinical committee on internal antiseptics of the National Research Council, who developed the germicide in the Hopkins laboratories, said that he and his associates had passed ten years in research to perfect it.

"He first fed the antiseptic to rabbits, Dr. Leonard said. When the animals showed no ill effects, he swallowed some of it and was

not inconvenienced. Assured of its harmlessness, he and six men who were working with him began to take daily doses of increasing size in order to study its effects in the body.

"It was then that the antiseptic was applied for the first time by Dr. Leonard to the actual treatment of disease. In some cases infections of the kidneys which had been of long standing were cleared up in forty-eight hours, according to the records. The cures appeared to be permanent, it was said.

"Dr. Leonard added that a committee of fifteen had been appointed by the National Research Council to work with him in further researches to determine how broad might be the application of hexylresorcinol to disease in general. The substance is being sent to medical schools and hospitals for additional tests."

Milk in Chunks—The milkman in Nome, Alaska, does not need to worry about spilling his milk. He calls from house to house and delivers a block of frozen reindeer milk or cream equal to a pint or a quart. A white cord frozen into the block of milk serves as a handle to facilitate delivering. The blocks of milk and cream are tastily wrapped in oiled paper looking for all the world like ice cream.

COMMENTS

Dating Canned Goods—Dr. R. S. Cooley, Assistant Health Officer of Lakewood, Ohio, has called to our attention the fact that in his experience cases of food poisoning have resulted from the use of spoiled, canned and bottled food products, and as a means of prevention suggests that all producers of this class of products be required to date their packages in a plain ineffaceable manner. With this suggestion of Dr. Cooley's, we are heartily in sympathy, not because we believe that slow progressive decomposition with the formation of toxins goes on generally in canned goods between the time of packing and consumption, and that therefore goods over a few months in age should be avoided, but because either through a dating system or a batch number system it is possible for packers and control officials to most easily and effectively locate and remove from the channels of trade all cans of any lot of which more than the customary number have been found to show decomposition due to incomplete sterilization, faulty operation of sealing machinery or defective cans. The batch mark was effectively employed in locating and destroying other containers of the same batch as the can of ripe olives which caused the deaths at Cody, Wyoming. It is believed, however, that dating is preferable to batch marking for the reason that it makes a direct incentive for the dealer to move the older goods from his shelves first. By such a course the packer would be benefited because canned foods deteriorate in flavor on standing and a consumer may become prejudiced against them by reason of being given very old stock and, moreover, the consumer would be benefited because the fresher the stock the less the chance for corrosion to have taken place in the can and the less metallic contamination there will be in the food. In connection with this whole subject an article which appeared in the January 14, 1925, issue of the Official Record of the United States Department of Agriculture is of interest and is quoted.

"Assuming that they have been properly cooked and sealed, canned foods differ markedly in the amount of chemical change that is inherent in the products and in the amount of corrosive action upon the container. It is therefore impossible to fix a general time limit to their period of fitness for consumption. In general, canned food is fit for consumption as long as a critical examination of the product fails to disclose some type of spoilage. This may be a short time or a number of years, according to the product. A swelled or leaky can indicates possible fermentation or spoilage. On opening the can the odor should be characteristic of the product and the contents should appear free from mold, disintegration and cloudiness. No discoloration of the product should be apparent and the inside of the can should be clean and bright, or well lacquered, not markedly corroded. If there is a doubt as to whether the food is spoiled, add half the volume of boiling water and boil thoroughly. If you are sure the food is spoiled, discard it.

ABSTRACTS

The Effect of Light on the Organism—Rats were kept in a dark room from birth on a diet containing a constant amount of vitamin A just sufficient to maintain health under ordinary conditions, and at the age of three or four months their blood was examined for platelet count and number of red cells. Of the seven rats examined, all but one had a

greatly lowered platelet count. The rats with the subnormal count were then exposed to the light of a mercury vapor lamp from 3 to 5 minutes each day for from 14 to 25 days, after which blood platelet counts were again made. In every case there was a decided increase in the number of platelets, which was greatest in the animals which had received the longest exposure to light. In three rats which had shown signs of anemia this had disappeared during the treatment.

The conclusion that light has a stimulating effect on the formation of blood platelets was tested further by studying the effect of ultra-violet light on the platelets of rats kept on a diet deficient in vitamin A. In the first series, two rats taken fom litters which had been kept from birth on a vitamin-rich diet were fed a vitamin A-deficient diet, and one was exposed daily for seven weeks to ultra-violet light while the other received no treatment. At the end of this time the conditions were reversed and the experiment continued for four weeks. The blood platelet counts of the rats receiving light treatment for the first period, at the end of the first, seventh, and eleventh weeks were 750,000, 728,000, and 666,000 per cubic millimeter. Corresponding figures for the other rats were 890,000, 546,000, and 830,000.

In the second series, three rats from litters on a vitamin-rich diet were placed on the vitamin A-free diet and after eight weeks, when all showed marked thrombopenia, two were given ultra-violet light treatment and the third left as control. The lower blood platelet count which all showed at the beginning of the light treatment increased rapidly in the two receiving treatment and was maintained at the same level in the other.

In a third series, three rats which had been kept on the low vitamin laboratory diet were placed on the deficient diet, one receiving the deficient diet from the start until the ninth week and the other two not until the fifth week. The latter developed eye lesions in the sixth week, while the other remained free from eye trouble.

In discussing these results the conclusion is drawn that "light is a stimulus to the formation of blood platelets. This explains the partial antagonism between vitamin A deficiency and exposure to light: Light can counteract the one lesion-thrombopenia produced by vitamin A deficiency, but cannot prevent the eventual atrophy of intestinal mucous membrane. Exposure to light can therefore delay but cannot prevent the eventual cessation of growth and the eventual onset of bacterial infections resulting from the vitamin A deficiency. Absence of light accelerates the onset of these conditions. Light is, however, not an essential condition for the formation of platelets, and its absence can be counteracted so far as the platelets are concerned by an abundant supply of vitamin A."—W. Cramer and A. H. Drew, *Brit. J. Exper. Path.*, 4 (1923), No. 5, pp. 271–282, figs. 5.

The Investigation of Sweet and Sour Milk (trans. title)—A detailed examination is reported of the reliability of various methods of testing for adulteration of milk, particularly watering, when the milk samples have soured through standing.—J. Drost, M. Steffen, and E. Kollstede, *Milchw. Forsch.*, 1 (1923), No. 1, pp. 21–62.

Making a Nutritionally Balanced Bread—The formula of the bread described, a public service patent for which has been issued, is as follows: Wheat flour 300, peanut or soy bean flour 100, table salt 6, calcium hydrogen phosphate ($CaHPO_4$) 6, butter 20, and compressed yeast 10 gm., with water 228 c.c.—C. O. Johns, A. J. Fink, and D. B. Jones, *Am. Food J.*, 18 (1923), No. 8, pp. 394–396, figs. 2.

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CHILD HYGIENE

TALIAFERRO CLARK

Malnutrition in Children of School Age—Probably no problem relating to child conservation has been given more attention in recent years than the nutrition of the child and its converse—malnutrition. Owing to the popular interest excited in the public mind by reports of varying percentages of malnutrition observed among school children in all classes of the population in every section of the country, a recent report on the observations made of 370 patients who attended the nutritional clinic at the Hospital for Sick Children, Toronto, Ontario, during the period October 1, 1919, to October 1, 1924, is of exceptional value in pointing the way to a proper estimation of some of the alleged causes of malnutrition.

The age incidence of the children under observation ranged from 77 at 6 years of age and under, 200 at 7 to 10 years of age, to 93 at 11 to 14 years of age. The greatest number of cases at any one age period was at 7 years.

Inquiries were made with regard to the length of time these children were breast-fed and also to certain family traits, as the stature of the parents. Of a total of 295 children on whom authentic information could be obtained, 48 per cent were breast-fed from 1 to 9 months, and of this number 28 per cent were breast-fed from 6 to 9 months. A total of 153 children, or 52 per cent, were breast-fed from 9 to 24 months. Of this number 35 per cent were breast-fed from 9 to 12 months and 17 per cent from 12 to 24 months. It is quite evident from these observations that improper feeding in infancy was not the underlying cause of malnutrition.

With regard to possible hereditary characteristics, thinness was the family trait in 164 cases, and was not a family trait in 178 cases. From this it would appear that this family characteristic is not important.

Of the causes of malnutrition in the opinion of the author, based on this series of cases, 190, or 51.3 per cent, were due to mismanagement; 101, or 27.2 per cent, to physical defects; 44, or 11.8 per cent, to improper diet and faulty food habits; 21, or 5.0 per cent, to overfatigue; and 14, or 3.7 per cent, to faulty health habits.

On an analysis of the cases of malnutrition associated with physical defects, it was found that in 165 cases, or 51.8 per cent, of those who had not been operated on, the tonsils and adenoids were healthy; in 153 cases, or 48.2 per cent, the tonsils were diseased. In view of the fact that physical defect was associated with malnutrition in only 27.2 per cent of the cases, the diseased tonsil incidence of 48.2 per cent is rather significant from the standpoint of causation. On the other hand, the author reports that 148, or 40 per cent, of these children had good teeth and 222, or 60 per cent, has carious teeth. From this it would appear that, paradoxical as it may seem, carious teeth were not a factor in the malnutrition of the children under observation, because the incidence of carious teeth among them is no greater than, and in some instances not so great as, the incidence of this defect in the general run of the school population.

A rather surprising observation is that only 12 per cent of these children gave a positive reaction to the intracutaneous tuberculin test. From this it would appear that children reacting to the tuberculin test are not unduly malnourished.—Chas. S. MacDougall, *Pub. Health Jour.*, Toronto, Jan., 1925.

Hyperthyroidism in Children—Out of 5,000 cases of goiter seen in the Mayo clinic since 1918, there were but thirty patients under 15 years of age. In this group, eight patients were under 10 years. The onset of exophthalmic goiter is somewhat earlier than the age of the patients indicates. One patient was aged 5 years when operated on, but the history indicated that the condition had begun in the latter part of the third year.

Most of the patients have exophthalmos. Some become highly emaciated. Although the disease is intense, children endure it well. It

is surprising to see children with high degrees of exophthalmos and hyperthyroidism playing and running around, and on the whole feeling well. They are nervous and irritable, and unable to stay in a constant position. The basal metabolic rate in children may be the essential finding in establishing a diagnosis.

At the clinic, eight children with exophthalmic goiter have been operated on with no deaths resulting.—Transactions of Central States Pediatric Society, by Henry S. Plummer, *Am. J. Dis. Child.*, Jan., 1925.

Certificates for Mothers' Health Clubs—The Division of Maternity, Infancy and Child Hygiene issues a certificate to mothers for satisfactory completion of a mothers' health club course in maternity hygiene. These clubs or classes are taught by a public health nurse who has had the approved instruction. Upon receipt from the teacher of a list of women who have earned the certificates, the names are entered on the certificates which are then sent to the teacher for her signature and presentation.—*Health News*, New York State Department of Health, Feb. 9, 1925.

Secondary Cases of Diphtheria—In one family five secondary cases of diphtheria occurred. The primary case was in the hospital for 72 days and exactly one week after discharge a new case occurred in the family, followed by another 3 days later, and then three more at intervals of 5, 7 and 9 days. Five cases of diphtheria, of a total of approximately 150 cases notified during the year 1923, were treated at home and in no instance did a secondary case occur.

In a special investigation of the influence of housing upon the attack rate over a three-year period, it was found that the rate was 0.40 per 1,000 in families of less than one person per room, 1.53 where there were 1 to 2 persons per room, and 3.31 where there were more than 2 persons per room.—J. Macmillan, *Med. Off.*, Dec. 20, 1924.

Definition of Child Welfare—In marked contrast to the prolixity of so many workers in the field of child welfare is the definition of "child welfare," by Dr. Helen MacMurchy, chief of the division of child welfare, Dominion Department of Health, Ottawa, Canada, which appeared in the December, 1924-January, 1925, issue of "The World's Children," as follows:

"Great words, such as love and home, are hard to define and so is child welfare. It would seem to include at least three things: A right heredity, a good environment, and the chance of full growth and development. It does not seem reasonable to limit the meaning to any set period under 21 years, or to any circumstances of life, favorable or unfavorable."

Coöperation of Medical Schools with the Local Health Department in Child Health Work—A plan has been completed which links up the child and baby hygiene division of the city department of health, Boston, Massachusetts, with the pediatric departments of the Boston University, Harvard and Tufts Medical Schools. The plan calls for the selection and assignment of a medical personnel of 15 trained pediatricians to function at the various baby and child hygiene stations maintained by the city health department, selected by the professors in charge of the pediatric departments in the three medical schools, who will act as an advisory committee to the child and baby hygiene division of the city health department.

Among other things, the committee will make recommendation with regard to medical personnel, the standardization of equipment and the conduct of well baby and child conferences. Under this plan it will be possible to use the conferences in teaching medical students.

The New Zealand School Dental Scheme—In view of the high percentage of dental defect, "90 per cent of all school children," in the country, the shortage of dental service, the scattered population, and the strain of post-war conditions on the country's finances, the government decided to train young women to perform the necessary dental service for school children from 5 to 8 years of age. These young women are appointed as officers of the health department, and they are specially trained by this department solely for government school dental work.

The training which they are required to undergo covers a two-year special course, including intensive training in a science course arranged by the department's officers. A part of the training is a thorough grounding on diet as a means of prevention of dental disease.

The work of the nurses is limited to the treatment and filling of the deciduous teeth, fillings in permanent teeth where the pulp is not involved, extractions of deciduous teeth, and first permanent molars.

The syllabus of training is as follows:

FIRST YEAR

Chemistry—An elementary general knowledge of chemistry to serve as an introduction of physiology.

Biology and Dental Anatomy—A general elementary knowledge of cell structure and development; the development, eruption, and structure of the teeth.

Anatomy—A general knowledge of the bones, muscles, vascular, nervous, digestive, and excretory systems, with more minute study of the structures of the head and neck.

Physiology—A general knowledge of circulation, respiration, digestion, absorption, nutrition, and excretion.

Histology—An elementary knowledge of the microscopic appearance of the principal tissues of the body, with special reference to the mouth and teeth.

Preliminary Operative Course—A short course of lectures on filling materials and cavity preparation, followed by a course of practical operative work. The latter consists of the preparation and filling of cavities in extracted teeth, mounted in dummy heads.

SECOND YEAR

Dental Surgery and Pathology—Abnormalities of position of teeth; saliva and calculus; etiology and pathology of dental caries; treatment by filling and by extraction (Note—Root filling is not taught); prevention of dental caries (Special attention is given to this); injuries to teeth; diseases of pulp, periodontal ligament, etc.; fracture and dislocation; use of local anaesthetics.

General Pathology—An elementary knowledge of bacteriological processes, inflammation, infection, shock, and collapse, affections of mouth, face, and lips, recognition of infectious diseases in children.

Materia Medica—The chief drugs used in dentistry, their use and actions, symptoms of poisoning, antidotes.

Operative Dental Surgery—During their second year, the probationer dental nurses examine, chart, and, under supervision, carry out the treatment necessary for the children that present themselves at the clinic attached to the training school.

Examinations—In addition to the usual class examinations, a primary examination is held at the end of the first year, and a final examination at the end of the second year.

These examinations are conducted by the medical and dental officers of the Department of Health.

It seems as if the decision to train young women for this work is based on the assumption that the greater part of the treatment necessary for children of the 5-8 year age groups will be of the deciduous teeth which seldom require advanced dental surgery, therefore, to employ the services of only fully qualified dental surgeons to do this work would be an economic waste.

One is inclined to take issue with this viewpoint, and to question whether the prescribed training, as outlined, qualified these young women for the important corrective work designated. There is converging evidence that the principal objective of school dental work should be prevention rather than correction, and no distinction should be made between this and other forms of prevention, that is, it should be carried on by skilled dental surgeons, coördinately with the other branches of school health supervision.—By Thomas A. Hunter, *Med. Off.*, Jan. 31, 1925.

Correspondence Courses for Mothers—"If we could raise up one generation of mothers, fully instructed in all things which make for sturdiness of body, all our health teachers would be out of business." The total enrollment of the Virginia Correspondence Course for Mothers, as of January 1, 1925, was 973, representing 95 of the 100 counties of the state and 12 states other than Virginia. Of this number, 93 had completed the course, and 277 had been dropped from the list for various reasons. At the present time 603 are actively at work, sending in interesting papers, and are seemingly enthusiastic.

During 1925 the Correspondence Course for Mothers is to be featured in the work of the cradle roll of the Methodist Church. The state superintendent of the cradle roll has taken the course and all the district superintendents have enrolled.

The course has also been adopted by the hygiene class for girls in the High School at Nashua, New Hampshire.—*Virginia Health Bull.*, Jan.-Feb., 1925, Vol. 17, Extra number 3.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Headings That Get Attention—"Is Laziness a Disease? Kept Her Husband by Gaining Weight"; "Rejected for Insurance Stages a 'Come-back'"; "Life Through Rose-colored Glasses: Constipation, darkener of life, readily cured in most cases"; "The 'Shimmying' Tooth-brush: Modern use of the ancient wood-stick."—*Pop. Health Mag.*, Essex Building, Minneapolis, Dec.-Jan. 10 cents.

"Save the Tissue and You Save All"; "It's Better to be Sunburnt than to 'look so natural'"; "Four Times as many People as Solomon had Wives"; "Linger Longer Letty Dear"; "Taking an Unfair Advantage of the Undertaker"; "Twenty Times the Number Who Came in the Mayflower"; "A Thousand More Games of Golf." Ask the *San Francisco* Tuberculosis Association, 55 New Montgomery St., for copies of their Monthly Bulletin containing brief articles under the above headings.

"Catching Tuberculosis from a Cow"—*Connecticut* Health Bulletin.

Will You Be an Official Correspondent?—Will you help to dig out the good ideas, the choice pieces of printed matter, the successful use of new methods? Will you be an official correspondent of this department of the JOURNAL? Will you keep an eye on all the health activities in your city or county or state, sending to this department or asking the leading actors to send to us everything we should have for mention in this department?

"Begin Your Post-Mortem Now"—These words introduce the following message: "The art of merciless self-criticism is necessary for the highest success of anyone in a position of public responsibility. Now is the time to begin to check up on the mistakes and shortcomings of the present Seal Sale, and to prepare for greater success next year. It is not enough merely to think things over, but chalk them down on paper. Put them away for reference in a special file and bring them to the Workers' Conference."—*News Bulletin*, Massachusetts Tuberculosis League, Dec. 17, 1924.

Direct Mail Advertising—The Direct Mail Advertising Association is made up of a considerable number of advertisers who use the mails. The annual convention, meeting in Boston this year, October 28-30, with its exhibits is the big opportunity for seeing how commercial advertisers do it. If you are interested in securing information about either the Association or the convention tell the editor of this department.

You May Borrow Them—Some of the periodicals and other publications mentioned in this department of the JOURNAL will be supplied freely upon application. In some cases the editions are limited but enough spare copies will be available to meet the requests of our readers. Other issues may be out of print. Practically any item mentioned in the department will be loaned by the editor. Please mention the title, organization issuing it, and date of the JOURNAL. Return promptly—and when you return enclose the same postage you place on the outside.

Who Are the Elect?—What are the especially selected addresses for mailing your weekly or monthly bulletin and your annual report, apart from the general run of distinguished citizens who are supposed to be interested or to be worthy of cultivation? Is the National Health Library, 370 Seventh Ave., New York, N. Y., on your list? Please verify, because I know that I receive some official bulletins which do not get to the National Health Library. Is the United States Public Health Service on your list? How about the national health agencies which touch your field? Please send your select list of a half dozen or a dozen addresses. Should state libraries, state historical societies or other state centers receive such publications? Let's make up a list.

* Please address questions, samples of printed matter, criticism of anything which appears above, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

What Public School Leaders Say Health Education Should be and How It Should Be Done—We leave to the review department of the JOURNAL the responsibility of reviewing the recently published report of the Joint Committee on Health Problems in Education. But we wish to emphasize to readers of this department the importance of this report to every health worker who is concerned with school health instruction. It is not a manual nor a daily program for the teaching of health. It is much more than that in being a contribution towards meeting the necessity that "the educational forces within the schools should study, interpret and coördinate the aims, materials and methods in the field of health education."

More Puzzles for Teacher—In addition to references for teachers at the end of many of the chapters of this report, there is a bibliography. We have commented before in this department on the need of more careful compiling of material of this kind and of making it more practically helpful to readers. In this case, under "Other Organizations from Which Information, Charts, Pamphlets, Slides, etc., May Be Obtained" the list seems too varied and uneven to be of much use since it fails to specify in most cases the kinds of materials available. The annotations of the lists published in the National Child Health Council reports made those lists much more usable than the lists in the present report. Should we not have a careful study of how to select and to present information sources for teachers?—Health Education: Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association with the coöperation of the Technical Committee of Twenty-seven, Dr. Thomas D. Wood, 525 West 120th St., New York, N. Y., 1924. 161 pp. Price, 50 cents.

City Department Bulletins—*Philadelphia* is making good use of photographs to illustrate its physical equipment and activities.

New Haven, October, 1924, carried a page headed "Have You a Cold?" Simply and clearly a single idea was offered under each of two sub-heads: "When You Have a Cold" and "When You Don't Have a Cold." In December, 1924, "Good Health Means Happiness for Nineteen Twenty-five" appears in large letters on one-half of the cover page, with a well-written warning inside against "Skating on Thin Ice."

Baltimore, November, 1924, includes health "Questions and Answers," and a "Physician's Column."

New York, July 19, 1924, included a detailed description of the five periodicals and the six groups of other publications of the Department, which is helpful in understanding the publication policy of a large city department.

Chicago, in the past six months, has had as many lay-outs for cover and inside pages. Perseverance and willingness to be inconsistent have brought better copy and a better appearance than ever before.

Washington circulates 139 copies of its weekly three sheet mimeograph bulletin to "health departments, physicians, insurance companies, a few libraries, local interested laymen, etc."

Government Publications—"Price List 71—Children's Bureau and Other Publications Relating to Children." Free on application to Superintendent of Documents, Washington, D. C.

"Helps For the Rural School Nurse," by Harriet and Hazel Wedgwood, Bureau of Education, Washington, D. C. 10 cents. Superintendent of Documents. It looks good. The lists of sources for "helpful material" are classified and give data as a basis for intelligent ordering or correspondence. This is the best constructed source list I have seen in several years.

"Monthly Catalogue United States Public Documents." Monthly. 50 cents a year. Superintendent of Documents, Washington, D. C. Lists all government publications as issued.

"Nutrition Work for Preschool Children," by Agnes K. Hanna, Children's Bureau, Washington, D. C. 5 cents. Superintendent of Documents, Washington, D. C.

Where Do You Get Lantern Slides?—The Department of Surveys and Exhibits, Russell Sage Foundation, is checking its lists of lantern slides for the sake of workers in all fields. Please tell Evart G. Routzahn, Russell Sage Foundation, 130 East 22d St., New York, N. Y., of satisfactory or unsatisfactory sources for securing slides. Also kindly report what slides on what subjects you have to loan, rent or sell.

Local **Private Agency Bulletins**—*Rochester* Tuberculosis and Public Health Association uses school-made poster and car card designs to enliven its pages.

Alameda County (*Oakland*) Health News publishes lists of health periodicals on file in the local public library with brief annotations.

Day Nursery Bulletin, National Federation of Nurseries, 105 East 22d St., New York, N. Y., has made its initial appearance.

Social **Welfare Periodicals**—*Social Legislation*, Public Charities Association, 311 South Juniper St., Philadelphia. To further health and other social legislation all members of the state legislature are listed with their home addresses. A full list of committees is included. A clever touch is "Follow the Green Line," at top of cover page of the January 31 issue, with a green arrow extending across the top, down at left side, and over the back to a subscription coupon.

Social Welfare Administration, bi-monthly issue of *Better Times*, 100 Gold St., New York, N. Y., for February, contains too many items to list—on money raising, publicity, office management, etc. Better ask for a copy.

How Does It Work?—You have been fascinated by the ease and accuracy of the demonstrator in the booth at the fair or exposition. And you made a purchase. But at home "the thing didn't work." This *may* be the experience of some of us with some of the materials or equipment or even the ideas we hear about at conventions or read about in the JOURNAL. Please tell us about your failures. Even if you say that the experience is related in confidence we will value the chance to learn that "the thing didn't work." But tell us, if you can, why it did not work in your case. Of course the story of your successful use of an idea or a piece of equipment will be useful.

"**Propaganda on Maternity and Child Welfare**"—An afternoon of the English-speaking Conference on Infant Welfare was devoted to this subject. Including the interpretation of some American methods by Miss Ellen C. Babbitt, American Child Health Association, there was much emphasis upon many points we all know but do not always practice.

An interesting convention practice is illustrated by the schedule of conference fees ranging from one shilling for attendance at one lecture to twenty-one shillings "for attendance at all the Conference Sessions and Special Meetings, Course of 3 Lectures, one group of visits to institutions, all social functions, and inclusive of a copy of the report and advance proofs of the papers to be read."—*Report of Proceedings*, National League for Health, Maternity and Child Welfare, 117 Piccadilly, London, W. 1, England. 240 pages. 2 shillings.

A Nurse and Leaflets as Substitutes for a Monthly Bulletin—It so happens that the Bridgeport, Conn., Health Department, in its Bureau of Child Hygiene, has available enough nurses to make a visit each month to every home in the city in which during the year a baby is born. The births of these infants are of course reported to the department, and within twenty-four hours after the receipt of the report, a nurse calls at the home to deliver a certificate of birth to the parents, and to give them such advice as she may in the care of the child. Beginning on January 1, 1925, the nurse will deliver, in addition to the certificate, a small loose-leaf binder in which the certificate will be placed, and in which will also be enclosed the first of twelve pamphlets relating to the care of the child and of other children in the family. Each month thereafter, for twelve months, when the nurse makes her regular visit to the mother, she will ask for the binder and will place within it another leaflet. As there are somewhat over three thousand births in Bridgeport each year, we will in this manner reach that number of families, rich and poor.

For many years the department issued a monthly bulletin. It became apparent, however, that this bulletin failed to reach the great mass of people in the community to whom it would be of most value. It did, of course, reach a rather large number of certain individuals, members of local organizations and of the city government, merchants, business executives, etc., among whom it perhaps succeeded in stimulating an interest in the department and its activities. While this is desirable in any community, it is even more desirable that the department in some way reach the still larger group who make up the majority of the city's population. So the bulletin was discontinued, and the scheme outlined above will carry out in part the educational program of the department.

As years go by, the percentage of the population reached through the nurses' visits will no doubt increase, and it is possible that the

plan, if it meets with the success that we believe it will, may be extended to include other families with whom the nurses must come in contact during these visits.—W. H. Coon, M.D., *Am. City*, 31:550–551 (Dec.), 1924.

People We Know—John Ritchie, so long known in connection with public health publicity, has resigned his connection with the Massachusetts Tuberculosis League. He will be associated with Frank Irving Cooper Corporation, architects, concerned with schoolhouse planning and construction.

Paul L. Benjamin, who some years ago conducted the first health play contest on record, in the schools of Minneapolis, is now legislative representative of the Public Charities Association of Pennsylvania.

Miss Louise Franklin Bache, educational secretary of the Syracuse Department of Health, will have charge of the publicity for the spring campaign of the Syracuse Community Chest.

"Professor Happy," baptized as Clifford Goldsmith, is no longer with the American Child Health Association, but is doing free lance writing. Why not engage him to put joy into some of your unspritely health leaflets?

Dr. George K. Pratt, who was responsible for some especially interesting educational material while Medical Director of the Massachusetts Society for Mental Hygiene, is now Assistant Medical Director, National Committee for Mental Hygiene, New York City.

How Do You Spell That Name?—This is a frequent question in handling correspondence. All such trouble for others will be avoided if your secretary will typewrite your name below the space where the signature will be written.

"The House of Health"—"One of the most popular booths at the Prince Edward Island Provincial Exhibition in September was the one in which Miss Wilson, the Chief Red Cross nurse, had built a wonderful 'House of Health.' The foundation was built of prunes, apricots and beans. The walls were stuccoed with oatmeal and decorated with slices of beets and carrots. The window shutters were made of whole-wheat bread, the sills of raisins, the curtains of lettuce leaves, the upper part of the dormer windows of shredded wheat biscuit, and the roof of graham flour crackers. A bottle of milk made the chimney and prunes were used for the door. This house even had a doorstep made of soap and a pathway of lima beans bordered with rice. Fruit and nuts were growing in the garden. A horse and cart stood at the door with vegetables and a Good Health Fairy stood guard at the entrance."—*Canad. R. C. Junior*, Toronto, 4:5 (Feb.), 1925.

DATES AHEAD

April:	Health Book Month
April 5–11:	Negro Health Week
April 8:	International Bird Day
April 10:	Good Friday
April 12:	Easter Sunday
April 13:	Thomas Jefferson's Birthday
April 19:	Patriots' Day
April 19–26:	National Garden Week
April 26:	Confederate Memorial Day
April 27–May 3:	American Forestry Week
May 1:	May Day—Child Health Day
May 3–9:	National Music Week
May 10:	Confederate Memorial Day
May 10:	Mothers' Day
May 10–17:	Better Homes Week
May 18:	Peace Day
May 24:	Empire Day (Canada)
May 30:	Memorial Day
June 3:	Jefferson Davis' Birthday
June 14:	Flag Day
June 14:	Children's Day
July 1:	Dominion Day (Canada)
July 4:	Independence Day
July 14:	Bastile Day

Cross-Word Puzzles in Departmental Bulletins—*Detroit* was on the job November 20 with a puzzle including a double-barred cross and four Red Cross crosses in the design. Prizes of $15, $7 and $3 were offered to children under 15 years for solutions accompanied by two sentences describing the message carried in the design. *New York* state republished the puzzle, offering to publish the name and address of the first child under 15 years of age "who sent in the correct solution with the two sentences." *Brookline* published a puzzle on behalf of the local Anti-Tuberculosis Society. The design carried an effective double-barred cross. The answer was posted in the public library, or mailed to anyone who sent a self-addressed, stamped envelope and 10 Christmas Seals to the society secretary. Neither of these puzzles included many health words. *Baltimore* published one with a little more health in it.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

THE SIXTY-EIGHTH CONGRESS

The Sixty-eighth Congress, which became a matter of history on March 4, 1925, will probably be remembered, if at all, for the legislation which it failed to pass, rather than for that which it did pass. There were two sessions, the first from December 3, 1923, to June 7, 1924, and the second from December 1, 1924, to March 4, 1925. A review of legislation considered in the first session was given in this department in the August JOURNAL, but it may be appropriate at this time to review the Sixty-eighth Congress as a whole.

Measures Which Became Laws—Measures relating to the public health which became laws included: prohibition of pollution of coastal waters by vessels; extension of the maternity and infancy act to certain of the territories; a vocational rehabilitation act; provision for participation in an international narcotic conference; prohibition of the importation of crude opium; codification of laws pertaining to veterans; various appropriations for public health, usually less than in previous years; a special appropriation of $275,000 for plague prevention; a special appropriation of $57,600 for investigation of oyster pollution; more hospitals for veterans; establishment of a dairy bureau in the Department of Agriculture; and a number of other measures of less importance, though several bills relating to public health in the District of Columbia, such as control of milk, dentistry, optometry, and venereal diseases, are of great significance to the people of the District. Among new laws of general scope were acts relating to immigration; reduction of taxes, which incidentally, failed to incorporate a provision reducing tax on physicians who use narcotics in a professional capacity as had been requested; the bonus for war veterans; and reorganization of the consular service on an efficiency basis. This last named law might be a good model for the federal personnel engaged in public health work. The Child Labor amendment to the Constitution, which was passed and submitted to the states, has not been accepted by them.

Measurer Which Did Not Pass—Although many measures which should have been passed were not, some of those which were not should not have been, so that there was positive accomplishment in their failure. Especially notable in this connection, of course, was the defective bill for a new department of education and relief. Another bill for a new department of education with a provision for a huge grant to the states, partly for development of physical education, was also not acted upon. In view of the present reaction against federal subsidies, it had little chance for success. The educators are convinced, however, that they will eventually get their desired department with a secretary in the cabinet. Other bills not acted upon included measures to reorganize the Public Health Service; to grant commissions to the sanitary engineers of the Service, which everyone seems agreed they should have; investigation of medical diploma mills; the promotion of rural hygiene; the usual bill for a federal department of health; a bureau of medical research; transfer of the bureau of prohibition; and a number of other bills, none of them of paramount importance. In all, the first session had before it about 50 bills, not including appropriation measures, concerned with national vitality, and the second session had about 25 more. Of this total number only a dozen or so were enacted into laws. In the previous Congress, the Sixty-seventh, there were 31 new laws relating directly or indirectly to national health, although this number represented only about 3 per cent of all the laws adopted by that Congress.

It is worth reiterating that Congress will never give to public health the attention due it until there is in Washington an avowed public health lobby which looks after the interests of sanitarians, which are, of course,

the interests of all the people, in the same way that every other conceivable subject is promoted by duly accredited agents in the Capitol.

One other item should be mentioned: Congress passed smoothly and without debate or difficulty an act raising the compensation of its own members from $7,500 to $10,000 a year, and this in the face of the President's continual and emphatic request for economy. No comment is necessary.

The Inaugural—The President's inaugural address on March 4 contained no reference to the public health, although it enumerated various other attributes which he considers essential to our national welfare. The address was largely a plea for economy in governmental administration and the continuance of such international relations as will ensure world peace. The President is, nevertheless, interested in the health of the people and will, we believe, support any practical plan for bringing about more effective administration of federal health activities. The need for such coördination of existing agencies, without expanding them, is admitted and advocated by all sanitarians.

Recent press reports to the effect that the prevailing wave of economy has resulted in a recrudescence of the hygienically obsolete common drinking cup in the executive offices proved on investigation to be without foundation. It was what has sometimes been denominated "newspaper stuff." (Mr. Routzahn, please comment on this kind of health publicity.)

One of the features of the festivities during inaugural week was the speech of the Vice-President at his first appearance in the Senate. "That rule," said Mr. Dawes, with appropriate gestures, "which at times enables Senators to consume in oratory those last previous minutes of a session needed for momentous decisions, places in the hands of one or of a minority of Senators a greater power than the veto power exercised under the Constitution by the President of the United States, which is limited in its effectiveness by the necessity of an affirmative two-thirds vote." And more to the same effect, which was alleged to have vexed the members of this august body. Apparently the people as a whole have not been at all vexed, because Mr. Dawes happens to be right. What has this to do with public health? Much. The easier it is for one ranting statesman to block a worthwhile measure, the harder it may be to secure adequate federal legislation on sanitary subjects. It is to be hoped that the one-man filibuster may eventually be consigned to the limbo of forgotten things, along with the dodo and the idea that odors cause diseases.

Oysters—A good example of the way in which more than one federal bureau is interested, or assumes a part, in public health was shown by the conference on oyster pollution held in Washington on February 19. The United States Public Health Service of the Treasury Department, the Bureau of Fisheries of the Department of Commerce, and the Bureau of Chemistry of the Department of Agriculture united in calling a meeting with state officials and representatives of the oyster industry to consider measures to insure the future safety of shellfish. The Bureau of Fisheries also requested Congress for an appropriation of $25,000 to study oyster pollution, but the Appropriations Committee of the House decided that a public health study ought to be conducted by a public health agency, so called in the Surgeon General for consultation and finally granted $57,600 to the Public Health Service for the necessary investigation, which is chiefly a sanitary engineering matter.

The principal resolutions adopted at the shellfish conference on February 19, which was attended by about 150 delegates from 20 states, are as follows:

> "1. The beds on which shellfish are grown must be determined, inspected, and controlled by some official state agency, and the United States Public Health Service.
>
> "2. The plants in which shellfish are shucked or otherwise prepared or packed by the shipper must be inspected and controlled by some official state agency and the United States Public Health Service.
>
> "3. The freedom from typhoid bacilli of the workers who handle shellfish must be determined by some official governmental agency.
>
> "4. Failing to secure sufficiently high standards to protect the people as regards beds, floating and plumping practices and methods of shucking or other methods of preparation, a satisfactory practical method of pasteurization or other heat treatment

or chemical, or biological method which produces satisfactory results, must be installed and operated under proper governmental supervision.

"5. There must be such governmental supervision and such trade organization as will make plain the source of shellfish and will prevent shellfish from one source being substituted for those from another source. This will be chiefly a problem of the individual state.

"6. The methods of shipping must be supervised, inspected, controlled and approved by the proper official federal and interstate agency.

"7. The methods of storing, displaying for sale and dispensing must be determined, inspected and controlled by the proper state or city agency.

"8. The product must conform to an established, bacterial standard and must meet federal, state and local laws and regulations relative to salinity, water content, food proportion and conform to the pure food laws standards.

Summer Course in Public Health Law—The summer courses in public health and preventive medicine at Columbia University this year, as last, will include twelve lectures on sanitary law, by the associate editor. These lectures will be given Tuesdays and Thursdays from 1 to 1:50 P.M. at the College of Physicians and Surgeons, between July 6 and August 14. A fee of $10 is charged by the university and registration must be in by June 1. This course, intended for physicians, sanitarians, nurses and other health workers, will deal with all phases of the legal problems connected with public health, such as the sources of public health law, the police power, its extent and limitations so far as it affects health administration; powers, duties, authority and jurisdiction of state and local health departments; regulations and code making; legal aspects of communicable disease control; vaccination; nuisances; health officers; duties, powers, liability; statute making; court procedure; and legislation. The course will consist of lectures, supplemented by conferences for consideration of cases which have been adjudicated by courts of last resort. It will offer to health officials, other sanitarians, physicians, and workers in public and private health agencies, information in the legal principles of the control of disease and in health administration.

Persons interested should communicate with the Office of Summer Session, Columbia University, New York, N. Y.

Miscellaneous—The legislatures of some forty states have been in session since the first of the year and many bills on public health subjects have been before them. An endeavor will be made in a future issue of the JOURNAL to summarize state health legislation.

In an article on the Practical Value of the Examination of Food Handlers to the Army in the *Military Surgeon* for January, 1925, the author, Major A. L. Parsons, states that 37 cities, out of 81 which were asked for information in 1920, had laws prescribing such an examination. Requirements for medical examinations of food handlers have been upheld by the courts in Texas in two decisions handed down in 1923 (Ex parte Vaughan, 246 S. W. 373; Langley v. City of Dallas, 252 S. W. 203).

The law of eminent domain as it applies to water works is discussed by Philip Nichols in *Fire and Water Engineering* for December 31, 1924, according to an abstract in Public Health Engineering Abstracts of the United States Public Health Service for February 28, 1925.

An outline of the anti-tuberculosis movement, as sponsored by the National Tuberculosis Association, is given in the *Congressional Record* for March 3, 1925, as an extension of remarks of Hon. Arthur M. Free of California, a member of the House of Representatives.

In last month's JOURNAL we made a curious mistake in our remarks on the Child Labor Amendment. A reference was made to the lack of positive success of the "Nineteenth Amendment," referring obviously to the difficulties in enforcing prohibition. This should have read "Eighteenth Amendment" as it is the one which gives Congress power to prohibit intoxicating liquors. The Nineteenth Amendment grants suffrage to women.

CONVENTIONS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

April 27, American Congress on International Medicine, Washington, D. C.

April 27, American Water Works Association, Louisville, Ky.

April 27–May 2, National Congress of Mothers and Parent-Teacher Associations, Austin, Texas.

April 28–30, Medical and Chirurgical Faculty of Maryland, Baltimore, Md.

April 23–24, Central Atlantic States Association of American Dairy, Food and Drug Officials, Trenton, N. J.

May 4, American Society of Clinical Investigation, Washington, D. C.

May 4–5, American Climatological and Clinical Association, Washington, D. C.

May 4–5, American Association of Genito-Urinary Surgeons, Washington, D. C.

May 4–6, American Gynecological Society, Washington, D. C.

May 4–6, American Pediatric Society, Washington, D. C.

May 4–6, American Surgical Association, Washington, D. C.

May 4–6, American Laryngological Association, Washington, D. C.

May 4–6, American Dermatological Association, Washington, D. C.

May 4–9, New England Health Institute, Portland, Maine.

May 5–6, Congress of American Physicians and Surgeons, Washington, D. C.

May 5–6, American Society of Tropical Medicine, Washington, D. C.

May 5–6, American Orthopedic Association, Washington, D. C.

May 5–6, American Ophthalmological Society, Washington, D. C.

May 5–7, American Association of Physicians, Washington, D. C.

May 5–7, American Neurological Association, Washington, D. C.

May 8, American Psychopathological Association, Washington, D. C.

May 8–11, American Association for the Study of the Feeble-Minded, Raleigh, N. C.

May 12–15, American Psychiatric Association, Richmond, Va.

May 14–16, Canada Tuberculosis Association, Montreal, Canada.

May 15–16, American Academy of Political and Social Science, Philadelphia, Pa.

May 20–23, National Convention of Girl Scouts, Boston, Mass.

May 21–22, American Therapeutic Society, Atlantic City, N. J.

May 21–23, American Urological Association, St. Louis, Mo.

May 25–26, American Gastro-Enterological Association, Atlantic City, N. J.

May 25–26, American Association of Medical Milk Commissions, Atlantic City, N. J.

May 25–28, American Association of Anesthetists, Atlantic City, N. J.

May 25–29, American Medical Association, Atlantic City, N. J.

May 28–30, National Conference on Outdoor Recreation, Washington, D. C.

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